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Navigating the Evolving Landscape of External Financing in Sub-Saharan Africa

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ABSTRACT: The landscape of external funding flows to sub-Saharan Africa (SSA) has evolved significantly over the past two decades. This paper provides an overview of the non-official external financing sources, emphasizing the trade-offs between foreign and domestic currency-denominated debt. Using data from emerging and developing economies, we assess the likelihood of issuing Eurobonds or borrowing in the syndicated loan market, focusing on the implications for SSA. We also analyze the main drivers of yields at issuance and bond spreads, along with the reliability of credit ratings and the potential existence of an "African risk premium". Our findings suggest that global factors such as the US dollar and interest rates, along with domestic characteristics, including governance and political risk, play an impotant role. Once fundamentals are considered, we find limited evidence of credit rating agencies' bias against the region and a modest extra risk premium in normal times. As an alternative to external financing, SSA countries have been recently issuing more domestic-currency debt, reducing exchange rate risks but facing challenges in attracting foreign investors due to underdeveloped local debt markets.

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WORKING PAPERS

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[1] The views expressed here are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, or IMF management. The authors would like to thank Wenjie Chen, Christian Ebeke, Daniel Gurara, Frank Hespeler, Divya Kirti, Joseph Kogan, Thomas Kroen, Povilas Lastauskas, Kia Luo, Hui Miao, Axel Schimmelpfennig, Chima Simpson-Bell, Amadou Sy, Andrew Tiffin, and participants at the IMF seminar.

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I. Introduction

After a series of shocks that started with the Covid-19 pandemic, emerging markets and developing economies (EMDEs) have faced considerable financing challenges due to increasingly high levels of debt and debt service. This issue has become even more relevant in a global environment with higher-for-longer interest rates and elevated policy uncertainty. A significant share of the sovereign debt is denominated in foreign currency, making servicing these debt obligations increasingly costly in cases where the local currency weakens. Tighter financial conditions, persistent inflation and lack of fiscal discipline reinforce the prospects of higher interest rates, compounding financing challenges. This is particularly relevant for sub-Saharan African (SSA) countries, mostly frontier economies, where domestic financing options are more limited and external financing is disproportionately the main source, in light of significant development needs (IMF, 2024a).

Our empirical study explores the evolving landscape of funding flows to SSA countries, with a particular focus on the comparative importance of various external private sources, as well as the trade-offs between foreign currency and domestic currency-denominated debt. Additionally, we evaluate the feasibility and potential benefits of issuing Eurobonds or engaging in syndicated loans as alternative external financing strategies. To do so, we provide a comprehensive analysis of the key drivers of international bond costs, both in primary and secondary markets, focusing also on the existence of an "African Premium" – the extra borrowing cost paid by African countries relative to sovereigns in other regions with similar fundamentals – and the role of credit ratings. As an alternative to external financing, SSA countries have been recently increasing their issuance of domestic-currency debt. While this approach mitigates risks associated with exchange rate fluctuations, it often limits their ability to attract foreign investors primarily due to the underdeveloped nature of local financial markets. Finally, we identify policies that incorporate both domestic and external financing avenues, tailored to achieve debt sustainability and foster development across the continent.

This paper takes a holistic approach by comparing the main sources of external financing–Eurobonds, syndicated bank loans, and non-resident flows into local bond markets–available to governments in emerging market and developing economies (EMDEs). The empirical analysis and results will therefore be useful to policymakers in considering their debt financing strategies, weighing opportunities against potential costs and wider risks. Specifically, we address three interrelated sets of questions: 1) Is there a significant African risk premium in the Eurobond market? Are international credit rating agencies biased? 2) What is the relative importance of syndicated loans compared to Eurobond issuances for African issuers? What drives the ability to borrow from international investors? 3) How have domestic bond markets evolved over time and what is the role of foreign investors? To empirically assess these questions, we use transaction-level data from the international bond primary market, sovereign spreads from the secondary bond market, sovereign ratings, cross-border syndicated loans, and local bond yields covering a large set of EMDEs, in tandem with macroeconomic, financial, and other relevant data.

Our findings are threefold. First, the African risk premium is relatively modest for sovereigns in normal times, estimated on average at about 50 basis points in the primary market for Eurobond issuances. This premium increases substantially during periods of stress, potentially reflecting non-linearities and liquidity constraints. Additionally, we do not find evidence of a statistically significant premium in the secondary market, where sovereign bond spreads are considered. While SSA yields are much higher than for any other region on average, statistical analysis does not point to an ‘African premium’ once we control for other factors including

risk ratings and governance. Relatedly, our findings point to limited evidence regarding credit rating agencies' bias against sub-Saharan African countries. Second, syndicated bank loans are found to be relatively more important for African countries, compared to other regions. Historically, SSA countries rely more on bank loans compared to Eurobonds for government financing. Importantly, the likelihood of issuing Eurobonds or borrowing from the syndicated loan market is highly sensitive to global financing conditions, particularly the US dollar. Third, higher non-resident ownership of local-currency sovereign debt is generally associated with lower yields in emerging and developing countries. This effect is stronger for SSA countries. A higher share of foreign investors is associated with higher yield volatility across EMDEs as a whole, hinting to potential policy tradeoffs when attracting non-resident investor flows, although higher volatility is not found across SSA countries.

Our results complement the findings in the existing literature (Gbohoui and others, 2023) which show that the African risk premium disappears once other structural factors such as the quality of institutions, budget process transparency, or the informal sector are considered. Previous estimates of the African risk premium in the literature range from zero to 300 basis points, depending on the analyzed sample, period, and considered determinants (Olabisi and Stein, 2015; Morsy and Moustafa, 2020). Relatedly, we contribute to the strand of the literature focused on the determinants of sovereign spreads (Comelli, 2012; Gueye and Sy, 2015; Presbitero and others, 2016). Regarding the global factors, our results are consistent with the recent literature (e.g., Gelos and others, 2024; Bruno and others, 2022), emphasizing the importance of the US dollar as one of the key drivers of EMDEs capital flows along with global risk aversion (Akinci 2013; Akinci and Queralto 2022). We complement this strand of research by focusing on the role of global factors as drivers of EMDEs' sovereign bond yields and spreads in the Eurobond markets, syndicated loan issuances, and for local-currency bond issuances. Our findings suggest that the US dollar strength is associated with higher bond spreads, a higher likelihood of issuing Eurobonds as opposed to syndicated loans, and lower ratings for EMDEs, with all these effects stronger for SSA. At the same time, the likelihood of borrowing from the syndicated loan market increases when the US dollar weakens, while local-currency yields comove with the dollar. Additionally, higher uncertainty and tighter global financial conditions are associated with an increased probability of relying on loans.

Our paper also contributes to the relationship between bond spreads and credit ratings, focusing on the potential bias against the SSA region. Compressing a large variety of information and providing an evaluation of the borrower's creditworthiness, credit ratings play a crucial role in the financial ecosystem by influencing investment behavior, borrowing costs, and overall market stability. Previous research (Sy 2002; Özmen and Yaşar, 2016) finds that credit ratings, along with global financial conditions, largely explain movements in EMDEs' bond spreads. At the same time, market participants rely on other factors – outside credit ratings – to differentiate among countries particularly during crises.

Finally, we complement the analysis on Eurobonds and syndicated loans with domestic bond issuances, by focusing on the role of non-resident investors. Recent studies suggest that many emerging market countries and frontier economies have made strides in overcoming the original sin by attracting non-resident investors, enabling them to issue debt in domestic currencies (Onen and others, 2023; Nose and Menkulasi, 2025). Our findings indicate that higher non-resident ownership of domestic-currency debt typically leads to lower yields, with SSA countries experiencing an even more pronounced effect, potentially reducing yields by 0.4 percentage points for a 10 percent increase in non-resident holdings. However, in high-debt countries, an increase in non-resident ownership can result in higher yields. Interestingly, while non-resident ownership is generally associated with increased yield volatility in emerging markets, SSA countries exhibit a unique trend

where higher non-resident ownership correlates with reduced volatility. This suggests a potential opportunity for SSA nations to develop their domestic-currency debt markets to attract foreign investors effectively.

By leveraging a combination of multiple sources of external financing flows and highlighting the main stylized facts, quantitative analysis and case studies, this paper provides a holistic overview of an often-overlooked topic in academia, external non-official financing architecture for sub-Saharan Africa, as well as policy insights for policymakers, investors, and international partners involved in developing Africa's financing architecture. The structure of the paper is: Section II provides an overview of the empirical approach; Section III focuses on the international bond market, presenting analyses on the African risk premium, bond spreads, and credit ratings; Section IV compares the syndicated loan market with the Eurobond issuances; Section V delves into the domestic bond market, emphasizing the role of non-resident investors; and Section VI concludes.

II. Empirical Approach

To empirically quantify the “African risk premium”, we rely on a panel regression model with fixed effects:

$$Y_{c,i,t} = \alpha + \beta\left(X_{c,i,t}\right) + SSA_c + \Gamma_i + \Lambda_t + \varepsilon_{c,i,t}, \quad (1)$$

where Y is the yield to maturity at issuance for country *c*, of rating *i,* at time *t.* $X_{c,i,t}$ is a vector of bond issuance characteristics, including maturity and tranche size. SSA is a dummy for all countries from sub-Saharan Africa, the so called “African premium”. Γ_i stands for rating fixed effects, a proxy for all country-specific fundamentals. Λ_t are the time fixed effects (quarterly), controlling for any global factors affecting all issuances at time *t.* For robustness purposes, a dummy for G20 countries is included as well.

To better understand the determinants of Eurobond spreads, including the role of global factors, we rely on a panel regression model with fixed effects:

$$Y_{c,t} = \alpha + \beta\left(X_{c,t}\right) + \gamma\, Global_t + SSA_c + \Gamma_c + \Lambda_t + \varepsilon_{c,t}, \quad (2)$$

where Y is the bond spread for country *c,* at time *t.* In this setup, *Global* refers to systematic “push” factors which reflect global financial conditions such as the US dollar index, short-term interest rates, and VIX index – a proxy for global risk appetite. In terms of “pull factors” (X), we focus on economic, financial, and political risk ratings (sourced from ICRG), allowing us to control for country-specific time-varying domestic factors. As robustness, the overall risk rating, the credit rating, and the orthogonalized versions of risk ratings are utilized as well. Γ_c denotes country fixed effects. SSA is a dummy for all countries in sub-Saharan Africa which, when included in the model, triggers Γ_c to become income-level fixed effects to avoid collinearity.

Next, we explore the role of domestic and global factors in the likelihood of the issuance of Eurobonds and bank loans. We adopt a probit model for the baseline, as follows:

$$Issuance_{c,t} = \alpha + \beta_1\, Risk\ Rating_{c,t} + \gamma\, Global_t + \varepsilon_{c,m} \quad (3)$$

where c and t stand for country and time (months), respectively. The dependent variable $Issuance$ is a dummy variable which takes 1 if a country issued a Eurobond or bank loan in a specific month, and 0 otherwise. Bank loans include both bilateral and syndicated loans from Dealogic. Domestic factors are captured by the index on risk rating ($Risk\ Rating_{c,m}$). In different regressions, we include the average of economic, financial and political risk ratings from ICRG (i.e., overall risk rating), those sub-indexes separately, and the components of each index which are orthogonalized. Global factors include the VIX index (VIX_t), the 3-month rate in the US ($3M\ rate_t$), and the US dollar index ($USD\ index_t$).

The International Country Risk Guide (ICRG) indicators offer several advantages for analysis, particularly due to their monthly frequency and comprehensive coverage of key macroeconomic and institutional dimensions. The economic risk rating, for example, incorporates variables such as per capita income, real GDP growth, inflation, and fiscal and current account balances. Similarly, the financial risk rating includes indicators like external debt-to-GDP, debt service obligations, foreign reserves (in months of imports), and exchange rate stability. The political risk rating captures a range of governance and institutional factors, including corruption, conflict incidence, ethnic tensions, and levels of accountability, among others. Some of these variables are usually included among spread determinants, at a yearly or quarterly frequency (Bellas et al. 2010, Kogan et al., 2024).

In addition, we examine whether those factors play a distinctive role for SSA countries, changing the likelihood of issuance for the region. For this purpose, we extend the specification in (3) by including the interactions between those variables and a dummy variable indicating SSA countries. The specification is as follows:

$$\begin{aligned} Issuance_{c,t} = \ & \alpha + \beta_1\, Risk\ Rating_{c,t} + \beta_2\, VIX_t + \beta_3\, 3M\ rate_t + \beta_4\, USD\ index_t + \beta_5\, SSA_c \\ & + \beta_6\, Rating_{c,t} \times SSA_c + \beta_7\, VIX_m \times SSA_c + \beta_8\, 3M\ rate_t \times SSA_c \\ & + \beta_9\, USD\ index_t \times SSA_c + \varepsilon_{c,t} \end{aligned} \quad (4)$$

Finally, we estimate pooled OLS regressions with time fixed effects to determine whether higher non-resident ownership is associated with lower yields. Letting $c = 1, \dots, I$ represent the set of countries and $t = 1, \dots, T$ represent the years in our sample, we use the following specification:

$$LC\ Yield_{c,t} = \alpha + \beta\ NonResident_{ct} + \gamma\ X_{ct} + \Lambda_t + \varepsilon_{c,t} \quad (5)$$

The dependent variable ($LC\ Yield_{it}$) is the yield to maturity on five-year local-currency bonds and the explanatory variable of interest ($NonRes_{it}$) is the share of non-resident ownership of the domestic-currency debt stock. Other research highlights a number of factors that can also influence domestic-currency debt markets in EMDEs, including the US dollar exchange rate in particular (Gelos and others, 2024). We therefore control for the trade-weighted dollar index in our analysis, as well as other factors such as policy rates and economic risk indicators.

To assess the relative importance of different drivers—domestic versus global—in explaining the issuance or pricing (premium) of Eurobonds, syndicated loans, and local-currency denominated debt, we apply the Dominance Analysis (DA) methodology, as outlined in Budescu (1993). This approach is implemented using the `domin` command in Stata. DA decomposes the overall explanatory power of the regression by estimating

the incremental contribution of each independent variable to the reduction in prediction error, thereby quantifying their relative importance.

Tables A1 – A3 describe the summary statistics for the following sections and Table A4 presents the country sample of Eurobond issuers and syndicated loan borrowers in our analyses.

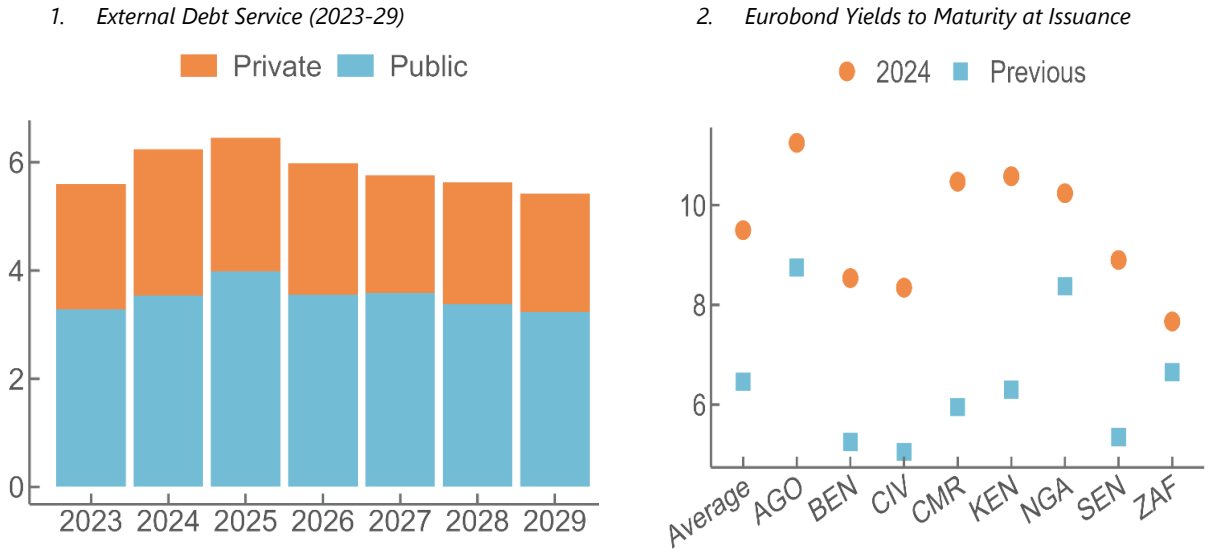
III. International Bond Market

This section documents the evolution of the international bond market, with a particular focus on the sovereign issuances from sub-Saharan Africa. Over the past decade, market-access countries in the region issued on average about $9 billion per year, or 1.5 percent of the issuers' GDP. Countries in SSA borrowed in the international markets nearly $40 billion between 2020 and 2024, with a similar average yearly issuance (approximately $8 billion per year) as in the pre-pandemic decade. Still, this represents a significant increase in Eurobond issuances compared to the post-Global Financial Crisis (GFC) period. For instance, countries from the region issued on average $4 billion per year during 2007-2016. While the total value of Eurobonds issued by countries in the region represented only 5 percent of EMDEs total in 2024, this share has increased significantly compared to pre-GFC period when the region represented less than 2 percent of total. Excluding G20 countries, region's 2024 issuances represent about 7 percent of total amount issued by EMDEs. Importantly, the number of distinct SSA countries issuing Eurobonds has surged from 5 countries prior to the GFC – including Mauritius, South Africa, Tanzania – to 17 countries in the decade prior to the pandemic, and 11 different countries post-pandemic. The surge in external borrowing led to significantly higher external debt service, both for region's private and public sectors (Figure 1.1). In terms of maturities, both the median and the average bond issuance have slightly lengthened (from 10 to 11 years for the median), between pre- and post-pandemic periods. These trends show that market access has significantly improved for the SSA region over the past two decades, with higher average amounts issued per year and longer maturities, but some countries have lost access in the aftermath of the pandemic, including during debt restructuring processes.

Countries from sub-Saharan Africa with market access have historically faced somewhat higher borrowing costs compared to similar issuers. For instance, Côte d'Ivoire's $2.6 billion Eurobond issuance in January 2024 (at a weighted-average spread of about 400 basis points) was its most expensive to date, although recent surges in costs can largely be attributed to the increase in US bond yields. Indeed, Figure 1.2 shows that the yield at issuance in 2024 for SSA countries was on average 300 basis points higher than in the previous issuances, representing a similar increase as in the benchmark yields. At the same time, Côte d'Ivoire's spread at issuance was about 50 basis points above the pricing of a similar bond from a developing country outside sub-Saharan Africa, with the same credit rating. This raises the question of whether there could be an "African premium"—defined as the extra cost African countries pay when borrowing from international markets that cannot be explained by differences in macroeconomic fundamentals.

Figure 1. Sub-Saharan Africa: Eurobond Yields and External Debt Service

(Percent; Percent of regional GDP)



Sources: World Economic Outlook (WEO), and Bloomberg.

Note: In Figure 1.2., "Previous" refers to issuances at similar maturity as those in 2024, with a large share from 2021.

African Risk Premium

The analysis in this subsection finds that the "African risk premium" is quite modest for sovereigns, and virtually non-existent for corporations and state-owned enterprises (SOEs). By controlling for issuer-specific fundamentals (proxied by the issuer's credit rating), global factors (proxied by time fixed effects), and bond characteristics (e.g., maturity, currency), the premium for sovereign Eurobond issuances (primary market) is estimated at 46 basis points with a standard deviation of 16 basis points (Table 1, column 1). This gap widens during global shocks to more than 120 basis points, underscoring potential constraints in terms of investor demand and liquidity, as well as potential non-linearities. When focusing on Eurobonds issued by sub-Saharan African SOEs and corporations, this premium is not statistically significant, indicating that borrowing cost are not found different from peers outside the region. One plausible explanation is that most sub-Saharan African corporations issuing Eurobonds, relative to sovereigns, are generally rated higher, as investment grade borrowers, a reflection of better governance and management standards, as well as healthier balance sheets.

However, this analysis does not address the question of the objectivity of credit ratings, which are taken as given in this section.[1] The ratings debate remains inconclusive, with data availability being one of the main

[1] For more details about this debate see Griffith-Jones and Kraemer (2021) and Fofack (2021), which discuss potential perception biases by credit rating agencies in the context of Africa and EMDEs, more generally.

obstacles. Moving away from ratings, Gbohoui and others (2023) and Presbitero and others (2016) found that, in the secondary market, the disparities in bond spreads between sub-Saharan African countries and their counterparts elsewhere are primarily due to weaker economic and political fundamentals, including the risk of conflict, default history, and structural issues. Specifically, challenges related to governance, transparency, and public finance management in sub-Saharan Africa are significant factors that contribute to higher spreads. We examine further these issues in the following sections.

Table 1. SSA Risk Premium: Eurobond Issuances across EMDEs

	(1)	(2)	(3)	(4)	(5)	(6)
	EMDEs: Yield to Maturity (annual percent)					
Group	Sovereign		SOEs		Corporates	
SSA dummy	0.460***	0.391*	0.258	1.111	-0.0727	0.209
	(0.163)	(0.214)	(0.640)	(0.753)	(0.292)	(0.673)
SSA x Crisis dummy	0.755**	0.678*	0.593		0.423	0.486
	(0.371)	(0.401)	(1.134)		(0.617)	(1.075)
Observations	1,658	1,072	1,941	380	3,877	991
R-squared	0.609	0.570	0.538	0.732	0.454	0.367
G20	YES	NO	YES	NO	YES	NO

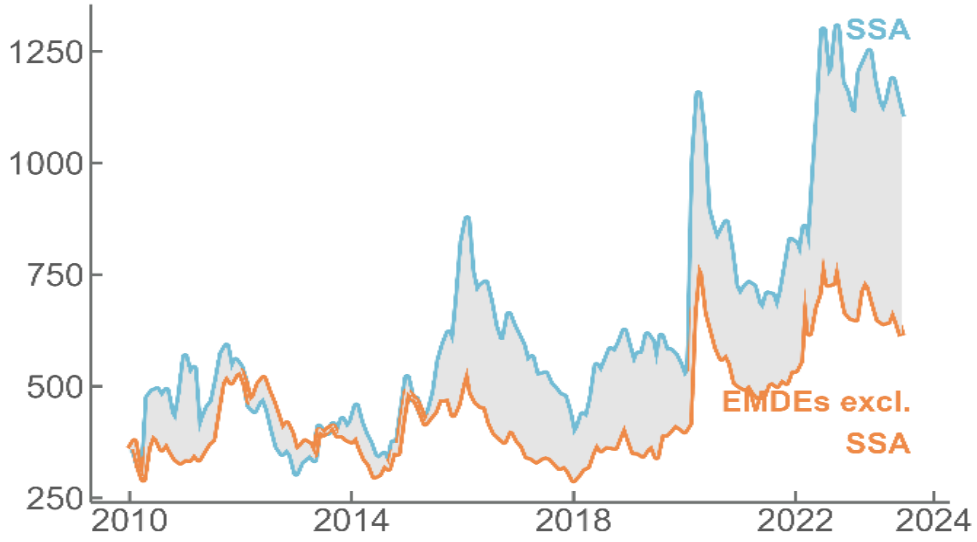
Note: SSA = sub-Saharan Africa; Robust standard errors in parentheses. Fixed effects for time and credit ratings are included in all regressions, along with bond characteristics (not reported). G20 is a dummy variable for countries belonging to the Group of Twenty. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 .

Spreads analysis

As shown in Figure 2, sovereign spreads are on average higher in SSA than in other emerging and frontier market economies. This was particularly apparent following the onset of the Covid 19 pandemic in 2020 and the start of the war in Ukraine in early 2022. This observation has led to an important debate on the existence of an SSA premium: the additional cost SSA sovereigns would need to pay to obtain financing from international markets, compared to similar sovereign borrowers outside Africa. Such an observation overlooks the macroeconomic and structural differences between SSA countries and other emerging and frontier market economies and raises the question of the determinants of sovereign spreads. This subsection uses a simple framework to analyze this question.

Figure 2. Sovereign Spreads in Emerging Market and Developing Economies

(basis points; group median)



Source: Bloomberg LP.
Note: SSA = sub-Saharan Africa; EMDEs = emerging market and developing economies. SSA includes Angola, Cameroon, Côte d'Ivoire, Ethiopia, Gabon, Ghana, Kenya, Mozambique, Namibia, Nigeria, Senegal, South Africa, and Zambia.

Our analysis examines the determinants of sovereign spreads for 67 countries, as measured by the J.P. Morgan EMBI+ index. The sample includes sub-Saharan African countries and other emerging and frontier market economies, and the time span varies based on the country's specific year and month of first issuance, generally covering the period 2000m1-2023m12. Global economic conditions are captured by the US Dollar Index, the VIX (CBOE Volatility) index, and the U.S. 3-month T-bill yield. Country risk scores are sourced from the International Country Risk Guide (ICRG) database, focusing particularly on three key categories: financial, political, and economic risks. These scores range from 0 to 100, with higher scores reflecting lower risk. Additionally, governance levels are measured using the World Bank's World Governance Indicators (WGI), which include metrics such as government effectiveness, rule of law, control of corruption, voice and

accountability, and political violence. To mitigate potential correlations between governance and risk sub-indicators, we construct aggregate measures for both risk (overall risk) and governance (aggregate governance) by calculating the simple average of the relevant sub-indicators. This analysis relies on variants of equation (2), with either country and year fixed effects, or income level and year fixed effects when a SSA dummy is included in the regression.[2]

Table 2 presents the determinants of sovereign spread levels for the sample and allows to examine whether the assumption of an SSA premium in the sovereign Eurobond market holds true. The results for models (1) to (5) underscore the significant influence of domestic factors—specifically financial, political, and economic risks—in explaining variations in spreads. Dominance analysis shows that factors such as government stability, law and order, historical economic growth, and accumulated foreign debt, all captured in the overall risk measure, are key to a country's risk perception and explain more than 80 percent of the spread variation (Figure A1). Model (6) includes an SSA dummy as an additional explanatory variable. The results reported in Table 2 show that the dummy is statistically non-significant and that, similar to the results of previous studies on this topic, such as Gbohoui et al. (2023), there is no evidence of an SSA premium when economic and sociopolitical determinants are included as explanatory variables. These results hold when the economic, financial and political risk ratings are used instead of the overall risk rating, when G20 members are excluded from the sample and when controlling for the role of IMF programs, and interactions between the SSA dummy and risk indices show that spreads determinants are not different than in other regions (Table A5).

[2] The respective equations are as follows:
$Y_{c,t} = \beta(X_{i,t}) + \gamma\, Global_t + \Gamma_c + \Lambda_t + \varepsilon_{c,i,t}$, and
$Y_{c,t} = \beta(X_{i,t}) + \gamma\, Global_t + SSA_c + \Gamma_{income\ level} + \Lambda_t + \varepsilon_{c,i,t}$.

Table 2. Determinants of Sovereign Spreads

	Dependent Variable: Sovereign Spreads Period: 2000m1 - 2023m12							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Overall Risk Rating	-86.4313***					-83.0699***	-62.6002***	-62.7147***
	(11.541)					(10.038)	(7.775)	(7.665)
Economic Risk Rating		-43.6606***			-117.4911***			
		(7.697)			(17.856)			
Financial Risk Rating			-54.8004***		-96.0666***			
			(5.909)		(10.970)			
Political Risk Rating				-43.5572***	-51.5129***			
				(9.873)	(11.735)			
SSA						-86.7971		-194.2952
						(119.180)		(157.882)
Governance Index							-762.5350***	-631.8425***
							(245.290)	(186.384)
U.S. 3-month T-bill Yield	5.4675	14.4758	-2.0101	-9.0563	3.2803	5.6420	1.0340	1.2553
	(8.614)	(8.856)	(9.377)	(8.029)	(9.385)	(8.644)	(7.359)	(7.390)
VIX	9.4563***	11.0341***	8.9009***	9.5249***	9.1739***	9.5546***	9.8242***	9.8621***
	(1.089)	(1.159)	(1.094)	(1.093)	(1.161)	(1.080)	(1.095)	(1.092)
Dollar Index	8.3608***	9.5463***	4.8817***	8.4187***	7.7369***	8.0912***	8.4542***	8.2815***
	(1.462)	(1.631)	(1.455)	(1.384)	(1.613)	(1.460)	(1.386)	(1.381)
Observations	13,022	13,022	13,022	13,022	13,022	13,022	11,842	11,842
Time FE	Year	Year	Year	Year	Year	Year	Year	Year
Group FE	Country	Country	Country	Country	Country	Income	Country	Income
R-squared	0.392	0.289	0.312	0.249	0.395	0.410	0.440	0.450
Number of countries	67	67	67	67	67	67	66	66

Note: individual risk ratings in model 5 are net of the other two ratings. A constant is included in all models, but not reported. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Model (7) in Table 2 includes the governance index as an additional explanatory variable, and model (8) includes an SSA dummy. The results for both models show that governance quality plays a pivotal role in reducing spreads.[3] Dominance analysis indicates that governance explains about one third of the variance in sovereign spreads (Figure A1). The absence of statistical significance for the SSA dummy indicates an absence of evidence of an SSA premium.[4] The difference in average governance level between SSA and other emerging and frontier market economies highlights both an important area for the region to focus on in order to improve access to Eurobond markets at more affordable rates, and one of the economic and financial payoffs of improving governance.[5]

Table 3 reports the results for variants of the previous models where the sovereign rating is added as an explanatory variable (Sy, 2002). All six models in Table 3 show that an increase in sovereign rating is

[3] As shown in Table A6, these results are robust to using the individual risk ratings instead of the overall risk rating.

[4] Models (5) and (6) in Table A6 show that this result is robust to excluding G20 members from the sample and controlling for the role of IMF programs.

[5] Models (3) and (4) in Table A6 show that the interaction between the SSA dummy and the governance index is negative and significant, suggesting that the benefits of improving governance on reducing sovereign spreads is even larger in SSA than in other regions.

associated with lower spreads. This corresponds to the results in Özmen and Yaşar (2016) for an earlier period. In economic terms, a notch improvement in sovereign ratings is associated, on average, with about a 130-140 basis points reduction in sovereign spread. The results for models (2) and (3), also show that domestic risk factors continue to be a significant determinant of sovereign spreads, as captured by the overall risk rating, which is the average of political, financial, and economic risks. The results for model (3) further show that the governance index becomes insignificant, suggesting that this variable is already captured by the sovereign rating. As shown for models (4), (5) and (6), all the previous results stand when an SSA dummy is included to the model, and the statistical insignificance of the estimate for the SSA dummy further shows the lack of evidence of an SSA premium in the sovereign Eurobond market once economic and sociopolitical determinants are captured for. Furthermore, interacting the SSA dummy with the spread determinants show that there are not different in SSA than in other regions (Table A7).

Table 3. Determinants of Sovereign Spreads, Including Sovereign Ratings

	Dependent Variable: Sovereign Spreads Period: 2000m1 - 2023m12					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Sovereign Rating	-141.0514***	-149.1005***	-126.1074***	-137.8459***	-147.1918***	-126.8640***
	(20.620)	(19.106)	(17.777)	(18.936)	(17.863)	(16.936)
Overall Risk Rating		-45.7540***	-39.9268***		-45.3562***	-39.6950***
		(6.991)	(6.310)		(6.942)	(6.343)
Governance Index			-217.5929			-138.6154
			(151.429)			(115.259)
SSA				-131.2309	-170.0852	-185.9164
				(100.567)	(104.689)	(114.106)
U.S. 3-month T-bill Yield	-12.3648*	-4.9272	-6.9007	-12.4302*	-4.9460	-6.9534
	(7.011)	(7.147)	(7.314)	(7.007)	(7.148)	(7.342)
VIX	9.3184***	8.9698***	9.0654***	9.3237***	8.9800***	9.0741***
	(0.859)	(0.908)	(0.936)	(0.860)	(0.904)	(0.932)
Dollar Index	11.1238***	10.9002***	11.3762***	11.1424***	10.9073***	11.3595***
	(1.242)	(1.372)	(1.448)	(1.252)	(1.378)	(1.447)
Observations	10,981	10,534	9,677	10,979	10,534	9,677
Time FE	Year	Year	Year	Year	Year	Year
Group FE	Country	Country	Country	Income	Income	Income
R-squared	0.470	0.516	0.506	0.470	0.520	0.510
Number of ccode	69	66	65	69	66	65

Note: Overall risk rating in models 2, 3, 5, and 6 are net of the sovereign rating. A constant is included in all models, but not reported. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

The previous analysis shows the absence of evidence of an SSA premium in the sovereign Eurobond market and the relation between sovereign ratings and sovereign spreads. However, it leaves aside the question of whether sovereign ratings are fair to SSA countries.[6] Another variant of equation (2), where the dependent variable $Y_{c,t}$ denotes the sovereign rating, provides the framework for a simple test of this hypothesis.

[6] This debate is anchored to the fact that SSA countries have generally lower credit ratings than other emerging and frontier market economies (see Figure A2).

Table 4. Determinants of Sovereign Ratings

	Dependent Variable: Sovereign Ratings Period: 2000m1 - 2023m12			
	Model 1	Model 2	Model 3	Model 4
Overall Risk Rating	0.2992***	0.2333***	0.2834***	0.2238***
	(0.035)	(0.033)	(0.034)	(0.032)
Governance Index		3.4721***		3.3166***
		(0.665)		(0.625)
SSA			-1.1559**	-0.5804
			(0.545)	(0.563)
U.S. 3-month T-bill Yield	-0.0312	-0.0251	-0.0292	-0.0240
	(0.021)	(0.021)	(0.021)	(0.021)
VIX	0.0021	0.0021*	0.0019	0.0019
	(0.001)	(0.001)	(0.001)	(0.001)
Dollar Index	-0.0053*	-0.0059*	-0.0050	-0.0057*
	(0.003)	(0.003)	(0.003)	(0.003)
Observations	15,657	14,422	15,657	14,422
Time FE	Year	Year	Year	Year
Group FE	Country	Country	Income	Income
R-squared	0.321	0.382	0.350	0.400
Number of ccode	82	80	82	80

Note: Overall risk rating in models 2, 3, 5, and 6 are net of the sovereign rating. A constant is included in all models but not reported. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 4 reports the results of the models testing the determinants of sovereign ratings. Model (1) shows that lower risk (*i.e.* a higher risk rating) is associated with higher sovereign ratings, and that overall, sovereign ratings do not respond to shocks to the global environment *per se*. Model (2) adds the governance index as a dependent variable and confirms the previous hypothesis that better governance is correlated with higher sovereign ratings in the sample. Model (3) corresponds to model (1), except for the addition of an SSA dummy. The results show that this dummy is negative and statistically significant at the 5 percent confidence level: SSA countries tend to be associated with lower sovereign ratings than other emerging and frontier market economies, by 1.2 notch on average. However, the value of the dummy decreases to 0.6 notch and loses entirely its statistical significance when the governance index is reintroduced in the regression, as shown by the results for model (4). These results are robust to using the individual risk ratings, excluding G20 members from the sample and controlling for the role of IMF programs (Table A8). Interacting the SSA dummy with the sovereign rating determinants show that there are no differences between SSA and other emerging and frontier market economies, except for the financial risk rating, suggesting that an improvement in the financial risk rating is associated with a lower increase in sovereign rating in the region (Table A8).

This section tested whether there exists an SSA premium in the Eurobond secondary market compared to other EMDE countries. The results from this simple analysis further weaken the case of the existence of an SSA premium or a bias against SSA by credit rating agencies. In contrast, they suggest that once economic and sociopolitical risks are considered, as well as differences in the quality of governance, the apparent difference between sovereigns in SSA and in other emerging and frontier market economies becomes insignificant. These results, although from a simple framework, provide a strong argument in favor of improving governance and institutional quality, and an illustration of the potential economic and financial payoffs of such an effort in sub-Saharan Africa.

IV. Syndicated Loans

Trends and developments in the syndicated loan market

While Eurobonds are debt securities issued by borrowers in a foreign currency to a global investor base, a syndicated loan is a large loan provided by a group, or syndicate, of lenders to a single borrower.[7] The fundamental difference lies in their nature: a Eurobond is a tradable security sold in the capital markets, whereas a syndicated loan is a private credit agreement. Typically, syndicated loan agreements are characterized by their complexity and the inclusion of extensive covenants – those contractual clauses that impose operating and financial constraints on the borrower.

We start by documenting the frequency of Eurobond and loan issuances. Figures A3 and A4 in the Appendix depict the average monthly probability of Eurobond and loan issuances in our sample consisting of 102 EMDEs over the period 2000-2023, respectively. We observe that Eurobond issuances were less frequent in SSA countries compared to the rest of EMDEs, while the frequency of loan issuances were comparable across two groups. The average monthly probability of Eurobond issuance was 4.7 percent for the full sample of EMDEs. This probability was 6.2 percent in EMDEs excluding SSA countries but remained at 0.9 percent for SSA countries. On the other side, the average monthly probability of loan issuance was about 7.2 percent for the overall sample, while it was 7.8 and 5.8 percent for non-SSA and SSA countries, respectively.

We then explore the size of financing with each source. Figures 3 and 5 report loan and Eurobond issuances over the period 2000-2023, respectively. Overall, during this period, the size of financing for SSA countries was much lower both for loans and Eurobonds compared to the rest of EMDEs. EMDEs excluding SSA countries issued Eurobonds in the amount of 1,896 billion USD, whereas this stayed about 107 billion for SSA countries. EMDEs excluding SSA countries received loans in the amount of 1,015 billion USD, whereas it was about 171 billion for SSA. Comparing the two sources of financing for SSA countries, loans were a much more important source of financing for SSA countries (171 billion), than Eurobonds over the period 2000-2023 (107 billion).

The relatively high reliance on loans in SSA countries increased even more since the Covid-19 pandemic, also compared to Eurobond borrowing (Figures 4 and 6). During the period 2020-2023, SSA countries issued loans in the amount of 52 billion USD, while Eurobond issuances stood at 24 billion. The average annual issuance of

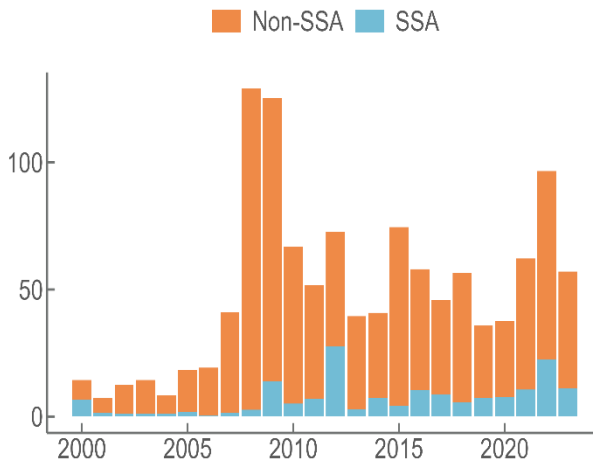
[7] In the analysis, we include both syndicated and bilateral bankl loans. In general, bilateral loans have similar terms and characteristics with syndicated loans, except that they involve only one lender.

loans by SSA governments increased from 6 billion USD during the period 2000-2019 to 13 billion in 2020-2023, whereas it increased from 4 to 6 billion USD for Eurobonds comparing the same periods (Figure A5).

We also document that maturity of Eurobonds and loans remain similar across SSA countries and other EMDEs, while loans tend to have shorter maturities compared to Eurobond (Tables A12 and A13 in the Appendix). On the other hand, the cost of borrowing remained higher for SSA countries, particularly for Eurobonds.

Figure 3. Loan Issuances

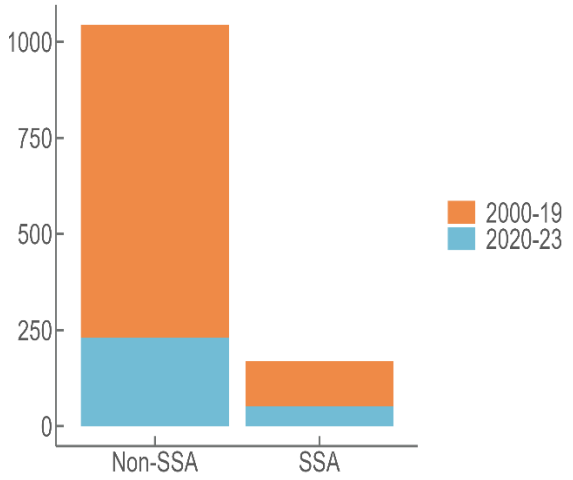
(in billion USD)



Source: Dealogic

Figure 4. Loan Issuances

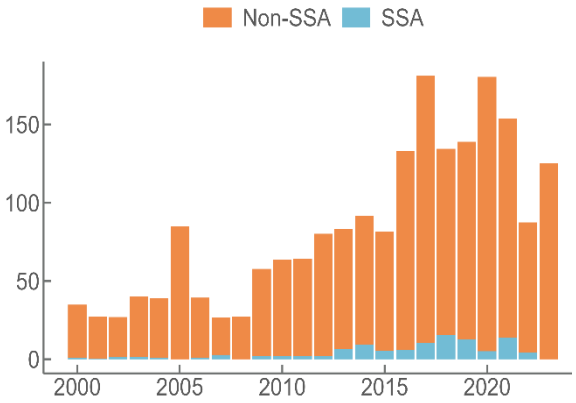
(in billion USD)



Source: Dealogic

Figure 5. Eurobond Issuances

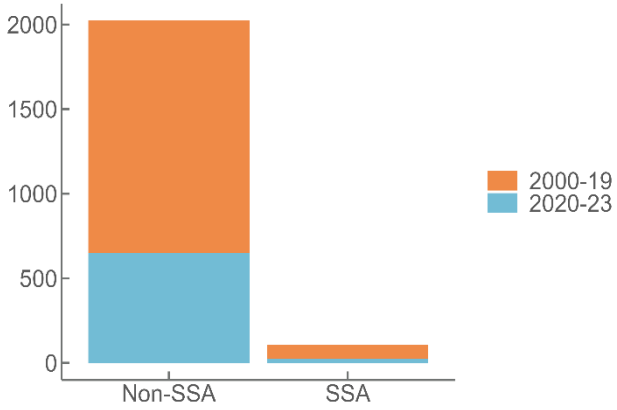
(in billion USD)



Source: Dealogic

Figure 6. Eurobond Issuances

(in billion USD)



Source: Dealogic

Likelihood of issuance: Main Results

In the section we explore the role of domestic and global factors in the likelihood of Eurobond and loan issuances in EMDEs. Table 5 documents the results for Eurobond issuances (columns 1-5). In column 1, overall risk index is a proxy for domestic conditions, the average of the index on economic, financial and political risk indexes. In columns 2-4, those indexes are included, separately. In column 5, each of the index is net of the other two (obtained by regressing on the other two and using the residual index from that regression). Columns 6-10 in Table 5 use the same set of variables to employ the analysis for loan issuances.

The results show that the likelihood of Eurobond issuance is higher for countries with relatively sound economic, financial and political environment; and during the periods of low uncertainty (i.e., lower VIX index), low interest rate, and when the USD is stronger. The likelihood of loan issuance is similarly higher for countries with relatively sound economic, financial and political environment; and when the 3-month rate is lower. However, there is a notable difference compared to Eurobonds. The issuance of loans becomes more likely during the periods of high uncertainty (i.e., high VIX index) and when the US dollar is weaker.[8]

While it is not possible to disentangle supply and demand side determinants, both could be driving these patterns. For instance, investors may generally choose to fund countries with sound domestic conditions for both Eurobonds and syndicated loans (supply side). During periods of heightened global stress (proxied by higher VIX), investors may be less willing to subscribe for Eurobonds (supply side), which can push countries in need of financing to switch to loans (demand side). During periods of globally high interest rates (proxied by the 3-month US rate), countries tend to avoid issuance of both sorts (demand side). In addition, different features of Eurobonds and loans could jointly shape those forces. For example, to the extent that Eurobonds encompass fixed rates in contrast to a typical syndicated loan, this could drive a relatively less significant role of global interest rates for loans, as countries may not want to lock in a higher rate (demand side).[9]

In additional results (Table A9 in the Appendix), we show that the issuance of Eurobonds in EMDEs during the last 3 years predict a higher probability of loan issuance, and vice versa. Moreover, the presence of IMF-supported programs during the last 3 years are also linked to a higher issuance of Eurobonds and loans (Table A9 in Appendix).

Dominance analysis

The dominance analysis suggests that domestic factors are more important in explaining the issuance of Eurobonds, compared to loans (Figure 7). In particular, the overall risk rating helps explain 73 percent of the variation in Eurobond issuance, whereas it is 50 percent in the case of loans. Among external factors, the most

[8] The results remain similar when tested in the subsamples with countries that issued at least one Eurobond or loan during the sample period, or in the subsample by excluding G20 economies (available upon request). We also confirm that the results from logit model, and also from probit model by including year fixed effects are similar (see the Appendix Tables A10 and A11). We also note that these patterns remain qualitatively similar when we control for country fixed effects on top of year fixed effects, with a notable difference that the statistical significance of domestic risk rating disappears in the case of Eurobonds.

[9] It is also worth noting that information asymmetries can play a role in the supply side drivers of bank and bond finance. For instance, De Fiore and Uhlig (2005) focuses on the role of this phenomenon in the case of firm financing.

notable difference across Eurobonds and loans is the USD index, which explains around 37 percent of the variation for loans, whereas it is only 6 percent for Eurobonds.

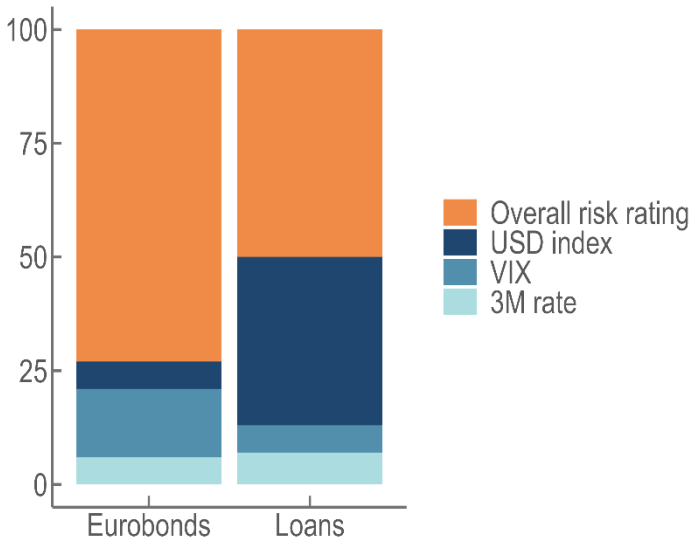
Table 5. Likelihood: Eurobond and Loan Issuances

	Eurobond					Loan				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Overall risk rating	0.0033***					0.0036***				
	(0.0003)					(0.0003)				
Economic risk rating		0.0018***			0.0033***		0.0028***			0.0051***
		(0.0002)			(0.0004)		(0.0003)			(0.0005)
Financial risk rating			0.0008***		0.0014***			0.0032***		0.0048***
			(0.0002)		(0.0004)			(0.0003)		(0.0004)
Political risk rating				0.0022***	0.0028***				0.0015***	0.0019***
				(0.0001)	(0.0002)				(0.0002)	(0.0002)
VIX	-0.0012***	-0.0011***	-0.0011***	-0.0013***	-0.0013***	0.0009***	0.0009***	0.0010***	0.0008***	0.0009***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
US 3M rate	-0.0042***	-0.0042***	-0.0032***	-0.0045***	-0.0047***	-0.0022**	-0.0026***	-0.0004	-0.0019**	-0.0017*
	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0009)	(0.0009)	(0.0009)	(0.0009)	(0.0010)
USD index	0.0007***	0.0007***	0.0006***	0.0006***	0.0006***	-0.0015***	-0.0016***	-0.0015***	-0.0017***	-0.0015***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Pseudo R squared	0.024	0.012	0.007	0.033	0.033	0.025	0.021	0.022	0.019	0.025
Observations	29038	29038	29038	29038	29038	29038	29038	29038	29038	29038
Countries	102	102	102	102	102	102	102	102	102	102

Note: Results are based on a probit model in eq. (3), where average marginal effects are reported. Individual risk ratings in columns 5 and 10 are net of the other two ratings. VIX, US dollar index, and the US 3M rate are included in the regressions but not reported. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Figure 7. Importance of Estimators

(percent)



Source: IMF staff calculations

Notes: Based on the results in columns 1 and 6 in Table 5.

Likelihood of issuance: Predictive Power of domestic and global factors

In this section, we go beyond statistical significance and investigate the predictive power of domestic and global factors using the receiver operating characteristic (ROC) curve, is a widely used tool for assessing goodness of fit under binary classification and Probit model. It represents the degree to which an empirical model successfully identifies positive cases (issuances in our context) and does not identify negative cases (no issuance) across all values.

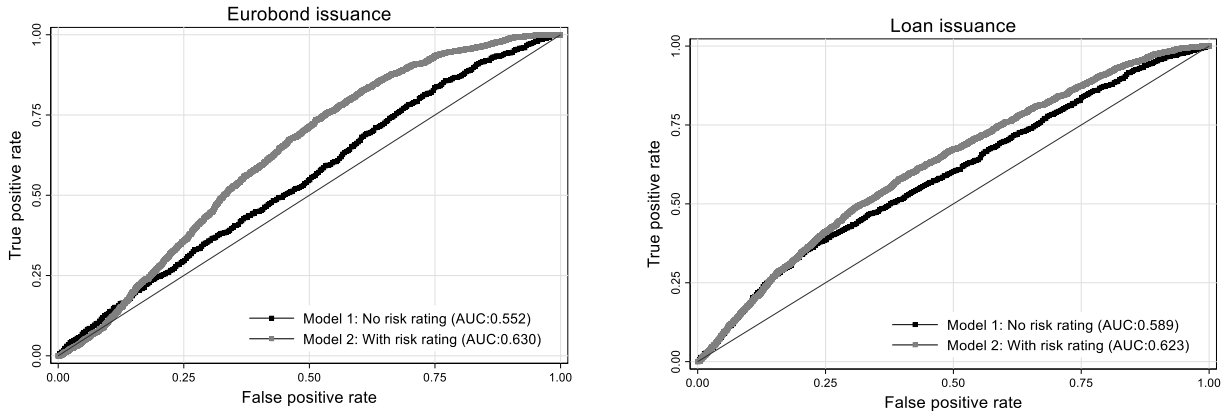
In Figure 8, x-axes in the charts indicate the false positive rate, i.e., how often there is no issuance when the model predicts an issuance. Instead, y-axes represent the true positive rate, showing how often the model predicts issuance when there is an issuance in the data. For example, a point in Figure 8 with true positive rate 0.75 and false positive rate 0.25 represents a threshold which predicts issuance when there is issuance in the data around 75 percent of the time and predicts an issuance when there is no issuance around 25 percent of the time. Hence, a ROC curve which is closer to the upper left corner of the box points to a better goodness of fit for the empirical model. The predictive power of the empirical model is captured by the area under the curve (AUC). When it is 0.5, the model is not informative, implying that it is equivalent to tossing a coin when predicting issuances (corresponding to the 45-degree line in Figure 8). Therefore, an informative empirical model should lie above the 45-degree line with an AUC value above 0.5. A model which perfectly predicts issuances has an AUC value of 1.

We perform the analyses to examine the predictive power of domestic and global factors for Eurobond and bank loans. The black lines in Figure 8 show the goodness of fit based on the Probit models by dropping the domestic factors (overall risk rating), but including global factors (VIX, 3-month rate and USD index). The grey lines represent the full model which includes the overall risk rating. Left-hand and right-hand side charts employ the analysis for Eurobond and loans, respectively.

Regarding Eurobonds, the black line in the left-hand side chart has an AUC value of 0.55 with a standard error of 0.008. Being statistically different than 0.5 at the 1 percent significance level, this AUC value means that global factors add some predictive power to the model, with the model performing significantly better than tossing a coin in predicting issuances. The grey line shows that the AUC increases to 0.63 with a standard error of 0.007, when we add the risk rating on top of global factors. This AUC value is statistically significantly higher than the first model at the 1 percent significant level. This suggests that domestic factors add predictive power to the first model which only includes global factors. While the model is far from being a perfect predictor, the AUC of the full model is in an acceptable range, and both domestic and global factors are important in predicting Eurobond issuances.

The right-hand side chart follows the same analysis for bank loans. The AUC value becomes 0.59 (with a standard error of 0.007) in the model which only includes the global factors, where it increases to 0.62 (with a standard error of 0.006) when we include the overall risk rating. Similar to Eurobond, we conclude that both domestic and global factors are important in predicting Eurobond issuances.

Figure 8. ROC Curves



Notes: The results are based on probit regressions with and without domestic risk rating.

Likelihood of issuance: Sub-Saharan Africa

We now explore the factors that play a role in the likelihood of Eurobond and loan issuances in SSA. Table 6 shows that results. Columns 1-2 (3-4) focus on Eurobonds (loans). The results in the first two columns suggest that SSA countries are less likely to issue Eurobond, but less so when they are sound domestic conditions.

Moreover, the role of global factors (VIX and 3-month rate) becomes more pronounced in the case of SSA countries. That is, SSA countries are even less likely to issue Eurobonds, compared to others, when global uncertainty is high or global financial conditions are tight.

The findings in the last two columns suggest that SSA countries are less likely to issue loans, but less so when they are sound domestic conditions, similar to the pattern observed for Eurobonds. However, the role of global uncertainty (VIX) and the US dollar index disappear in the case of SSA countries. On the other hand, a lower 3-month rate implies a higher likelihood of loan issuance for SSA.

Table 6. Likelihood: Eurobond and Loan Issuances in Sub-Saharan Africa

	Eurobond		Loan	
	Model 1	Model 2	Model 3	Model 4
Overall risk rating	0.0019***	0.0017***	0.0033***	0.0028***
	(0.000)	(0.000)	(0.000)	(0.000)
VIX	-0.0012***	-0.0011***	0.0009***	0.0011***
	(0.000)	(0.000)	(0.000)	(0.000)
US 3M rate	-0.0040***	-0.0032***	-0.0022**	0.0000
	(0.001)	(0.001)	(0.001)	(0.001)
USD index	0.0007***	0.0006***	-0.0015***	-0.0019***
	(0.000)	(0.000)	(0.000)	(0.000)
SSA	-0.0719***	-0.1667***	-0.0105***	-0.1993***
	(0.005)	(0.063)	(0.004)	(0.048)
Overall risk rating x SSA		0.0029***		0.0023***
		(0.001)		(0.001)
VIX x SSA		-0.0016**		-0.0012***
		(0.001)		(0.000)
US 3M rate x SSA		-0.0092***		-0.0090***
		(0.003)		(0.002)
USD index x SSA		0.0001		0.0014***
		(0.001)		(0.000)
Pseudo R squared	0.059	0.059	0.025	0.027
Observations	29038	29038	29038	29038
Countries	102	102	102	102

Note: Results are based on a probit model in eq. (4), where average marginal effects are reported. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

V. Local-currency Debt Market

Recent trends

Countries in sub-Saharan Africa have been issuing more domestic-currency debt in recent years. Total issuances across SSA, excluding maturities of less than one year, averaged $10.9bn per month in 2024, more than double the amount issued in 2019 (Figure 9).[10] These amounts are much larger than total Eurobond or foreign-currency syndicated loan issuances over the same period, demonstrating that many countries in SSA rely primarily on domestic-currency issuances to finance their debt, particularly where there is limited access to external funding.

The maturities of SSA debt issuances have been falling over time, particularly in 2020 as countries issued more short-term debt around the time of the Covid pandemic. Even after excluding securities with durations of less than one year, the average duration of debt issuances has fallen to around three and a half years in 2024, compared with an average of more than 6 years in 2019 (Figure 10). The same pattern is observed for median issuances across SSA. Shorter maturities mean debt has to be rolled over more frequently which can create financing risks in some cases.

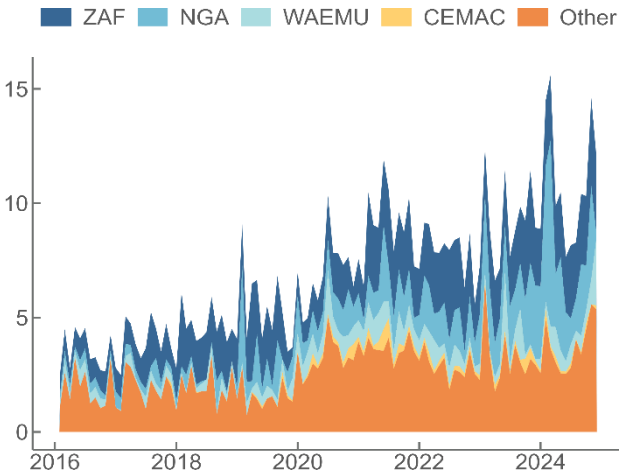
Interest costs will be one factor determining whether countries choose to issue domestic-currency debt. The average interest rate – measured by the yield to maturity – paid on domestic-currency debt issuances in SSA countries was on a downward trend between 2017 and 2021. Interest rates in other emerging markets and developing economies also declined over some of this period. As interest rates on debt have risen globally since 2022, those in SSA have also increased. Shorter-maturity debt tends to have a lower yield on average, so as maturities decline, yields would be expected to fall too. The increase in yields over recent years has therefore occurred in spite of the shorter maturity of the most recent issuances.

In the past, domestic-currency debt issuances have tended to have a higher interest cost than foreign-currency issuances. Since 2012, for example, domestic-currency yields have been higher than Eurobond yields around 80 percent of the time (Figure 11). This does not appear to be due to different country characteristics. The result holds when reducing the sample to compare only those countries that issued both domestic- and foreign-currency debt in the same year. Higher yields on domestic-currency debt may reflect the compensation demanded by foreign investors for accepting an exchange rate risk.

While interest costs vary widely across SSA, the increase in yields in 2024 has been seen across most countries. Seychelles had the lowest debt interest costs of SSA countries in 2024, at 3.2 percent, while Sierra Leone had the highest, at 39.8 percent. Between 2023 and 2024, nominal yields have increased in 24 of the 35 countries for which data are available, which equates to just under 70 percent. Correcting for inflation, the increase in real interest rates has been even more broad-based, with 27 countries in SSA seeing an increase in 2024, or 77 percent of the countries for which data are available.

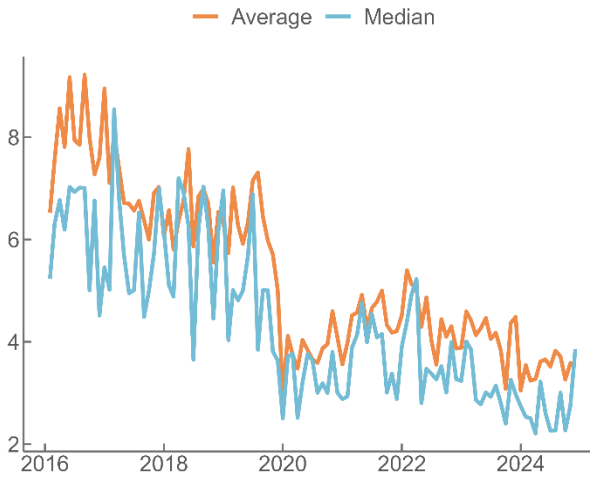
[10] Issuances with maturities of less than one year are excluded from this analysis because these very short maturity securities are assumed to be for debt management purposes, typically rolling over existing debt obligations as opposed to creating new debt, and the rates are less representative of the wider market.

Figure 9. Sub-Saharan Africa: Total Domestic Debt Issuance
(in billion USD)



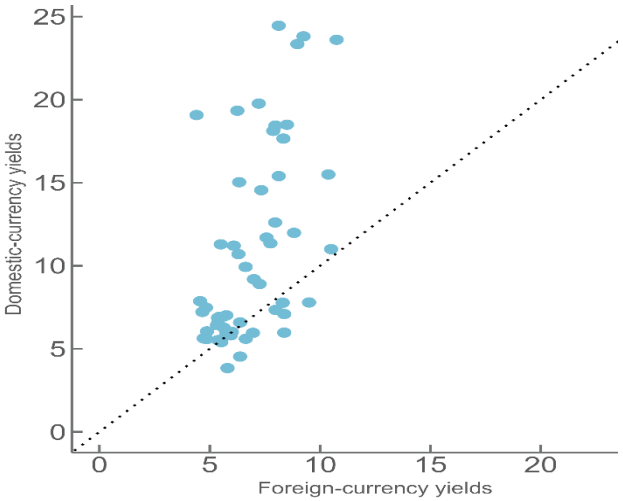
Sources: Cbonds and IMF staff calculations.
Notes: Issuances of less than one year are excluded; NGA = Nigeria; ZAF = South Africa.

Figure 10. Sub-Saharan Africa: Bond Issuance Maturity
(in years)



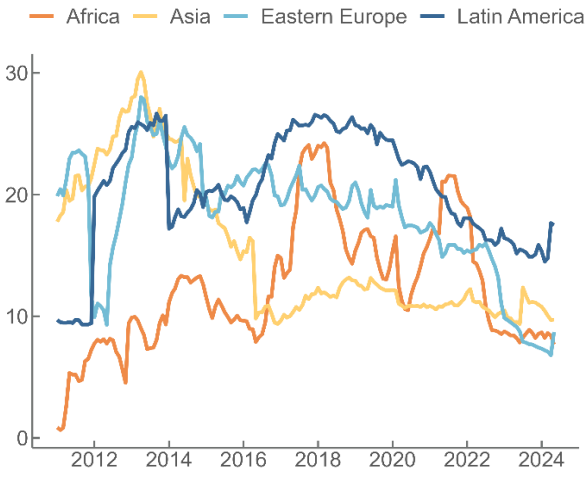
Sources: Cbonds and IMF staff calculations.
Note: Issuances of less than one year are excluded.

Figure 11. Average Yield to Maturity in SSA Countries Issuing Both Domestic-Currency and Foreign-Currency Debt in the Same Year
(percent)



Sources: Cbonds and IMF staff calculations.
Notes: Datapoints show the average yield to maturity in a country for a year in which they issued both domestic-currency

Figure 12. Non-resident Holdings of Domestic Local-Currency Government Debt
(percent; median)



Sources: Haver, Bloomberg, National Exchanges, and IMF staff calculations.

and foreign-currency debt. Averages are weighted by issuance sizes. Issuances of less than one year are excluded.

Despite the increasing issuance amounts over recent years, domestic-currency debt markets are nonetheless under-developed across many countries in sub-Saharan Africa (SSA). Non-resident holdings of domestic local-currency government debt have generally been declining across emerging markets since 2018. SSA has seen a similar decline and the share of non-resident holdings in SSA is also typically lower than in other regions (Figure 12). Investors may be deterred by a perceived lack of liquidity, for example, which can make it difficult to trade securities on the secondary market. There may also be regulatory or legal concerns, or a lack of transparency around future debt issuance plans.

Non-resident investors may behave differently from local investors, so it is especially important to understand the impact of opening up domestic-currency debt markets. Non-resident investors are more likely to trade on the secondary market, adding to liquidity. They may be particularly sensitive to certain market factors, such as yields, financial freedom, and exchange rate policy. In the case of Nigeria, for example, with non-resident holdings of domestic debt having increased significantly between 2017 and 2019 (Hosny, 2020), the ability to repatriate investments and returns has been found to be an important consideration for investors when deciding whether to participate in domestic debt markets. It is important to understand how the involvement of non-resident investors could affect market conditions including yields, particularly for countries where there may be little prior experience of non-resident participation in local-currency debt markets.

Estimating the impact of non-resident ownership of domestic-currency debt

Higher non-resident ownership is typically found to reduce yields

When financial markets are under-developed, non-resident investors are either unwilling or unable to purchase domestic-currency government debt in many cases. Across SSA, only Ghana, Kenya, Malawi, Nigeria, South Africa, Uganda and Zambia are known to have a positive share of non-resident owners in domestic debt markets. Other countries in SSA have no non-resident ownership of domestic debt, or no data available. Countries seeking to attract external financing at anything other than very short maturities are therefore forced to issue in foreign currencies, and thereby bear the exchange rate risk, or to rely on a smaller pool of domestic investors. A range of literature on fiscal policy and debt management in low-income countries and emerging markets refers to this as the ‘original sin’ (Eichengreen and Hausmann, 1999; Bertaut, Bruno and Shin; 2024 and Africatalyst, 2024).

Across emerging markets worldwide, studies suggest that progress has been made in overcoming the original sin, but there is little evidence available for sub-Saharan Africa. Emerging market countries have increasingly been able to issue debt denominated in domestic currencies by attracting non-resident investors (Onen and others, 2023, Nose and Menkulasi, 2025). Higher non-resident ownership of domestic-currency debt is in turn associated with lower debt servicing costs (Ebeke and Lu, 2014). Progress in attracting foreign investors to domestic debt markets has slowed or even partially reversed since 2013, however, with non-resident participation in local-currency bond markets leveling-off and subsequently declining in recent years (IMF, 2025). Due to lack of data, however, this relationship has until now not been extensively tested in SSA.

To complement the existing literature with a focus on SSA, data must be compiled from a range of databases and official data from country authorities. Data on emerging market domestic-currency bond yields are generally available from cross-country data providers.[11] To determine the extent of non-resident involvement in domestic-currency debt markets the analysis uses a combination of external cross-country data, IMF databases and debt statistics supplied to the IMF from country authorities. All data are available at a monthly frequency, covering the period from January 2011 to September 2024. The final sample consists of data cross 24 emerging market economies for which complete information is available across all variables.

Starting with the results for all emerging markets, reported in Table 7, our model suggests that a ten-percentage point increase in the share of non-resident ownership is associated with a 0.13 percentage point decrease in yields (Model 1). This result is found to be statistically significant at the 1 percent level and is broadly consistent with previous estimates in the literature. When there are more non-resident investors active in domestic-currency debt markets this increases the investor base for sovereign debt issuances and results in higher demand, boosting the prices of bonds and T-bills and reducing yields. There may be further secondary effects, for example by increasing liquidity in the domestic debt market and acting as a signal to wider investors, which could in turn reduce yields further.

The presence of non-resident investors in domestic-currency debt markets is found to be particularly important in SSA. A separate regression which includes a dummy variable for countries in SSA (SSA_i) and an interaction term with the share of non-resident debt ownership ($NonRes_{it} * SSA_i$) shows that the relationship between the share of non-resident investors and bond yields is even more significant for SSA countries. In this case a ten-percentage point increase in the share of non-resident holdings is associated with a decrease in yields of 0.4 percentage points (Model 2). Countries in SSA therefore stand to gain even more than other countries if they can attract non-resident investors, although further measures would be needed to completely eradicate the much larger SSA premium typically paid on sovereign debt.

For high-debt countries, however, a rise in the share of non-resident holdings is associated with higher yields. This result was tested using a dummy variable indicating whether country had a public debt to GDP ratio above 60 percent. That high debt indicator ($HighDebt_{it}$) variable was then included in the specification above, as well as an interaction term ($NonRes_{it} * HighDebt_{it}$). Results suggest that for a low-debt country, a ten-percentage point increase in the share of non-resident holdings is associated with a 0.09 percentage point decline in yields. For high-debt countries, however, the same increase in non-resident holdings is found to lead to an increase in yields, by 0.3 percentage points (Model 3).

Overall, by combining these results, we can deduce that a higher share of non-resident holdings of domestic debt is associated with lower interest yields. The effect is even larger for sub-Saharan African countries. For high-debt countries, however, the effect is reversed, with high-debt countries seeing increasing yields when the share of non-resident investors in their domestic debt markets increases

[11] Data on emerging market local bond yields with a 5-year maturity are obtained from Bloomberg and DataStream. Foreign holdings ratios are sourced from Haver Analytics, Bloomberg, national exchanges, and country authorities. Several control variables come from Haver Analytics and IMF databases.

As well as reducing yields, higher non-resident ownership can also increase yield volatility

If a large share of domestic-currency debt is held by foreign investors, that can also create risks. Non-resident flows may be more volatile than domestic flows. A country facing economic challenges could see rapid outflows if a large share of their domestic-currency debt is held by foreign owners. To test this hypothesis, we estimate a similar pooled OLS regression using the same panel data, but in this case with yield volatility as the dependent variable.[12]

Across emerging and developing economies, an increase in non-resident ownership is indeed found to be linked to higher yield volatility. Based on the full sample of all emerging market economies, pooled OLS regression results with year fixed effects suggest that a ten-percentage point increase in non-resident ownership is associated with higher standard deviation in yields, by 0.02 percentage points (Model 4). This effect is small but is found to be statistically significant at the 1 percent level.

In the case of SSA countries, however, a rise in non-resident holdings is not found to increase volatility in the same way. After including as before the dummy variable for SSA countries and the interaction term, results show that SSA countries have lower yield volatility on average than other EMDEs, with the standard deviation reduced by 0.3 percentage points. The inclusion of the interaction term also suggests that in the case of SSA countries, unlike other EMEs, higher non-resident ownership is not found to increase yield volatility. In particular, a ten-percentage point increase in non-resident holdings increases yield volatility – as measured by the standard deviation for non-SSA countries – by 0.05 percentage points. For SSA countries, however, the same increase in non-resident ownership is found to reduce volatility by 0.06 percentage points (Model 5). Lower yield volatility in SSA countries compared with other EMDEs could be due to the presence of non-residential investors leading to improved market conditions, for example by adding liquidity to the secondary market in countries where sovereign debt would otherwise typically be held to maturity. Further testing is needed to explore these possible channels further, particularly given the small sample size which means that not all results are statistically significant.

Similar to the case using yields as the dependent variable, we also repeat the analysis after including a dummy variable for high-debt countries and an interaction term with non-resident ownership and in this case, some of the effects are reversed. For low-debt countries, higher non-resident ownership is found to be associated with lower yield volatility, although the effect is found to be small and is not statistically significant relative to conventional thresholds. Conversely, for high-debt countries, an increase in non-resident holdings is typically associated with higher volatility. This could be consistent with an interpretation whereby capital flight by foreign investors becomes more likely in high-debt cases, leading to greater yield volatility in such cases.

[12] To measure yield volatility, we use the standard deviation of bond yields over rolling window: $YieldVol_{it} = \sqrt{\frac{\sum_{t-D}^{t}(Yield_{it} - E[Yield_{it}])^2}{D}}$, where *D* is the duration of the rolling window. Choosing the appropriate duration of the rolling window involves a trade-off between accurately capturing yield volatility and minimizing the number of lost observations. A higher number of observations gives a more accurate reflection of volatility, but the final month of interest will have less of an impact of the overall estimate. A longer rolling window will also result in more lost observations at the start of the sample. To balance this trade off, this analysis uses a duration of nineteen months to calculate yield volatility.

Overall, these results using yield volatility as the dependent variable suggest that in most emerging market economies, an increase in non-resident ownership can increase the volatility of yields as measured by the rolling standard deviation. That seems to be particularly true for high-debt countries where the risk of capital flight may be especially acute. These results, combined with those of the previous section, point to a trade-off for country authorities. While increasing the share of non-resident ownership in domestic debt markets is found to reduce yields on average, it can in many cases also lead to an increase in yield volatility. For the case of SSA countries in this sample, however, results suggest that there is no such trade-off. In those cases, higher non-resident ownership is found to reduce yields as well as reducing yield volatility. This points to a potential opportunity for SSA countries to develop domestic debt markets in a way that attracts foreign investors.

We conduct a number of robustness checks, with full set of results presented in the Appendix. The model specifications reported above include several control variables, including the dollar index, which studies have shown to play an important role in determining emerging market yields (see Figure A6 for correlations between the dollar index and yields in some SSA countries). We repeat the analysis with and without these controls and find the conclusions to be generally robust. We conduct the same analysis with country fixed effects, although the small number of countries in our sample means that we place less weight on these results. We also use a different measure of volatility based on the standard deviation of daily yield data over a ninety-day rolling window and again find that results are mostly unchanged, although in this case higher non-resident ownership is not found to be associated with lower volatility in SSA countries. Given that there are a large number of missing observations in these daily data, we consider the results presented above using the measure of monthly volatility to be our most robust estimates. See Appendix Tables A14 to A17 for full details of these robustness checks.

Table 7: Baseline Estimates of the Effect of Foreign Holdings of Local Government Bond on Bond Yields and Volatility in Emerging Markets

	Dependent Variable: Domestic Local Currency 5-year T-bond Yield and Volatility Period: 2011m1 - 2024m9					
	Bond Yield			Yield Volatility		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Non-resident Holdings	-0.0129***	-0.0075***	-0.0093**	0.0022***	0.0046***	-0.0007
	(0.003)	(0.003)	(0.004)	(0.001)	(0.001)	(0.001)
SSA		5.0698***			-0.0325	
		(0.276)			(0.045)	
SSA x Non-resident Holdings		-0.0348***			-0.0101***	
		(0.009)			(0.002)	
High Debt			1.1393***			-0.1487***
			(0.204)			(0.034)
High Debt x Non-resident Holdings			0.0426***			0.0127***
			(0.008)			(0.002)
Observations	3,073	3,073	3,073	3,011	3,011	3,011
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.674	0.772	0.698	0.217	0.242	0.231
Number of countries	24	24	24	24	24	24

Note: In all regressions., overall risk ratings, domestic policy rate, and global factors are accounted for. Constant is included in all regressions but not reported. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

For currency unions, non-resident investors within the union do not face exchange rate risk

In the case of currency unions, lenders from other countries within the union are to some extent 'non-residents', although they face no exchange rate risk. Taking the WAEMU as an example, the share of debt held by investors from other countries within the union has declined since 2020, similar to broader trends in other EMDE local-currency bond markets. Between 2020 and 2022, over 60 percent of the debt issued on the WAEMU regional market was bought by investors from other countries in the union, but since the start of 2023 that share has fallen to just over 30 percent. Non-resident participation in debt auctions is also found to be more variable than domestic participation. The standard deviation of the amount bought by non-resident buyers is almost double that of the amounts bought by domestic investors. Equivalent data for the CEMAC currency union show that the share of non-resident debt ownership within the union has also declined slightly over recent years. Non-resident investors owned 54 percent of the regional debt stock in early 2025, compared with 56 percent in mid-2023.

VI. Conclusion

The landscape of sovereign financing in sub-Saharan Africa is undergoing a significant transformation, characterized by shifting dynamics that may require a reevaluation of existing policies and strategies. Our empirical analysis reveals a compelling narrative: while SSA countries have increasingly turned to Eurobond issuances and other external financing options such as syndicated loans, they have simultaneously faced rising borrowing costs due to increasingly elevated debt levels and global financial conditions. This duality underscores the urgency for policymakers to adopt a diversified approach to financing that encompasses both domestic and international sources.

The empirical findings presented in this paper reveal that SSA countries are experiencing a modest African risk premium in the Eurobond market in normal times which becomes more significant during crises, contributing to higher borrowing costs. Our analysis indicates that external financing options, while vital, present inherent risks that require a balanced approach incorporating domestic financing strategies. The research also finds that, despite the surge in Eurobond issuances, syndicated loans have emerged as a more favorable financing route for many SSA nations, particularly in the context of post-pandemic recovery. Despite being more likely when global financing conditions tighten, this financing channel is less transparent, rising risks of hidden costs and undesirable covenants.

Central to this discussion is the need to strengthen governance and transparency across SSA nations. Improved institutional frameworks serve not only to enhance credit ratings but also to foster a conducive environment for foreign investment and durable growth. By addressing governance challenges, countries can mitigate risks associated with external borrowing, ultimately leading to lower costs of capital and a more sustainable fiscal trajectory. Policymakers must prioritize these governance reforms as a pillar of their financing strategies.

Furthermore, the paper highlights the increasing relevance of local-currency debt and syndicated loans as viable alternatives to traditional Eurobond issuance. By promoting the development of domestic bond markets, SSA countries can reduce dependency on foreign currency and lower borrowing costs. Historically, public debt market development has also contributed to broader financial markets development (Eichengreen et al., 2021, Chami et al., 2009). Engaging non-resident investors in these markets presents an opportunity to deepen liquidity, diversify funding sources, and bolster resilience against shocks. That said, in countries with fiscal dominance and a tight sovereign-bank nexus, increasing further domestic borrowing could adversely affect financial stability, particularly if risk premia are elevated in this market.

In conclusion, the financing architecture in sub-Saharan Africa is at a critical juncture, where the convergence of governance reforms, diversified financing strategies, and enhanced engagement with both domestic and international stakeholders can pave the way for sustainable development. As SSA countries navigate the complexities of the global economic environment, ongoing research and adaptive policy frameworks will be essential to ensure that financing mechanisms align with developmental objectives, ultimately fostering a more resilient and prosperous future for the region.

Future research should focus on the impact of governance reforms on credit ratings and non-resident investment flows in Sub-Saharan Africa, exploring how enhanced political stability, stronger institutions, and

transparency can mitigate the African risk premium. Additionally, it is essential to investigate the exact mechanisms driving lower issuances in SSA countries, particularly in the international bond market where African countries lag other regions. Understanding the implications for financing strategies in the region will also be critical. This research can provide valuable insights for policymakers aiming to optimize debt financing while ensuring economic stability and growth.

Annex

TABLES

Table A1. International Bond Market: Summary Statistics

Variable	25th	Median	Mean	75th	Std. dev.	Obs.
US 3M rate	0.1	1.0	1.7	2.6	1.9	288
VIX	14.2	18.0	20.1	23.7	8.2	288
US dollar index	82.2	91.9	92.1	98.8	11.3	288
EMBIG index	191.3	330.2	593.2	542.8	1764.3	13,716
Political risk	57.0	65.0	65.8	75.5	12.9	39,934
Financial risk	34.5	37.5	37.4	41.0	5.6	39,934
Economic risk	31.5	35.0	35.1	39.0	6.1	39,934
Overall risk rating	41.8	46.2	46.1	50.7	6.7	39,934
Aggregate governance	-0.7	-0.1	0.0	0.7	0.9	51,732
Sovereign ratings	8.0	12.0	12.2	16.0	5.3	26,092

Table A2. Likelihood of Issuance: Summary Statistics

Variable	25th	Median	Mean	75th	Std. dev.	Obs.
Overall risk rating	40.50	44.00	43.85	47.67	5.82	29,038
Economic risk rating	30.50	34.00	33.62	37.00	5.97	29,038
Financial risk rating	34.50	37.50	37.24	40.50	5.90	29,038
Political risk rating	55.00	61.00	60.67	67.50	10.17	29,038
VIX	14.2	18.0	20.1	23.7	8.2	288
US 3M rate	0.1	1.0	1.7	2.6	1.9	288
USD index	82.2	91.9	92.1	98.8	11.3	288

Table A3. Domestic Bond Market: Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Overall Sample					
5-year local currency government bond yield	3,337	7.93	5.05	0.70	20.07
Yield volatility	3,291	0.75	0.59	0.00	3.52
Non-resident holdings (percent)	3,415	18.03	12.72	0.00	58.33
Policy rate (percent)	3,585	7.21	5.42	0.25	50.00
VIX CBOE, ln	3,642	2.84	0.31	2.25	3.98
U.S. T-bond yield	3,642	1.91	1.13	0.27	4.77
SSA					
5-year local currency government bond yield	659	14.35	4.47	5.59	20.07
Yield volatility	648	0.82	0.56	0.00	2.49
Non-resident holdings (percent)	653	15.37	12.87	0.00	42.80
Policy rate (percent)	681	10.71	5.09	3.50	30.00
Non-SSA					
5-year local currency government bond yield	2,678	6.35	3.77	0.70	20.07
Yield volatility	2,643	0.74	0.60	0.00	3.52
Non-resident holdings (percent)	2,762	18.66	12.60	0.00	58.33
Policy rate (percent)	2,904	6.39	5.16	0.25	50.00

Table A4. Country Sample of Eurobonds and Loan Issuers

Code	Country	B	L	Code	Country	B	L	Code	Country	B	L
ALB	Albania	1	1	ETH	Ethiopia	1	1	NER	Niger	0	1
DZA	Algeria	0	1	FJI	Fiji	1	1	NGA	Nigeria	1	1
AGO	Angola	1	1	GAB	Gabon	1	1	OMN	Oman	1	1
ATG	Antigua and Barbuda	0	1	GMB	Gambia, The	0	0	PAK	Pakistan	1	1
ARG	Argentina	1	1	GEO	Georgia	1	1	PAN	Panama	1	1
ARM	Armenia	1	1	GHA	Ghana	1	1	PRY	Paraguay	1	1
AZE	Azerbaijan	1	1	GRD	Grenada	1	1	PER	Peru	1	1
BHS	Bahamas, The	1	0	GTM	Guatemala	1	1	PHL	Phillipines	1	1
BAH	Bahrain	1	1	GIN	Guinea	0	1	POL	Poland	1	1
BRB	Barbados	1	1	GNB	Guinea-Bissau	0	1	QAT	Qatar	1	1
BGD	Bangladesh	0	1	GUY	Guyana	0	1	ROM	Romania	1	1
BLR	Belarus	1	1	HTI	Haiti	0	1	RUS	Russian Federation	1	1
BLZ	Belize	1	1	HND	Honduras	1	1	RWA	Rwanda	1	1
BEN	Benin	0	1	HUN	Hungary	1	1	SAU	Saudi Arabia	1	0
BTN	Bhutan	0	0	IND	India	0	1	SEN	Senegal	1	1
BOL	Bolivia	1	1	IDN	Indonesia	1	1	SRB	Serbia	1	1
BIH	Bosnia & Herzegovina	1	1	IRN	Iran	1	1	SYC	Seychelles	1	1
BWA	Botswana	0	1	IRQ	Iraq	1	1	SLE	Sierra Leone	0	1
BRA	Brazil	1	1	JAM	Jamaica	1	1	SVK	Slovakia	1	0
BGR	Bulgaria	1	1	JOR	Jordan	1	1	SVN	Slovenia	1	0
BFA	Burkina Faso	0	1	KAZ	Kazakhstan	1	1	SLB	Solomon Islands	0	1
BDI	Burundi	0	1	KEN	Kenya	1	1	LKA	Sri Lanka	1	1
KHM	Cambodia	0	1	KWT	Kuwait	1	0	KNA	St. Kitts & Navis	0	0
CMR	Cameroon	1	1	KGZ	Kyrgyz Rep.	0	1	LCA	St. Lucia	0	0
CPV	Cape Verde	0	1	LAO	Laos	0	1	VCT	St. Vincent & the Grenadines	0	0
CAF	Central African Rep.	0	0	LVA	Latvia	1	0	ZAF	South Africa		1
TCD	Chad	0	1	LSO	Lesotho	0	1	SDN	Sudan	0	1
CHL	Chile	1	1	LBR	Liberia	0	1	SUR	Suriname	0	1
CHN	China	1	1	LBY	Libya	0	1	SWZ	Swaziland	0	1
COG	Congo, Rep. of	1	1	LTU	Lithuania	1	0	SYR	Syria	0	1
COL	Colombia	1	1	MKD	Macedonia, North	1	1	STP	São Tomé and Príncipe	0	0
COM	Comoros	0	1	MDG	Madagascar	0	1	TJK	Tajikistan	0	1
CRI	Costa Rica	1	1	MYS	Malaysia	1	1	TZA	Tanzania	1	1
CIV	Cote d'Ivoire	1	1	MWI	Malawi	0	1	TGO	Togo	0	1
HRV	Croatia	1	0	MDV	Maldives	0	1	TTO	Trinidad & Tobago	1	1
CZE	Czech Rep.	1	0	MLI	Mali	0	1	TUN	Tunisia	1	1
DJI	Djibouti	0	1	MRT	Mauritania	0	1	TUR	Turkey	1	1
DMA	Dominica	0	0	MUS	Mauritius	1	1	ARE	UAE	1	1
DOM	Dominican Rep.	1	1	MEX	Mexico	1	1	UGA	Uganda	0	1
ECU	Ecuador	1	1	MDA	Moldova	1	1	UKR	Ukraine	1	1
EGY	Egypt	1	1	MNG	Mongolia	1	1	URY	Uruguay	1	1
SLV	El Salvador	1	1	MAR	Morocco	1	1	UZB	Uzbekistan	1	1
GNQ	Equatorial Guinea	0	0	MOZ	Mozambique	1	1	VEN	Venezuela	1	1
ERI	Eritrea	0	0	NAM	Namibia	1	1	VNM	Vietnam	1	1
EST	Estonia	1	0	NPL	Nepal	0	1	ZMB	Zambia	1	1

Note: B = International Bond Issuer; L = Commercial (syndicated or bilateral) Loan Borrower

Table A5. Determinants of Sovereign Spreads (Robustness)

	Dependent Variable: Sovereign Spreads Period: 2000m1 - 2023m12				
	Model 1	Model 2	Model 3	Model 4	Model 5
Overall Risk Rating		-82.1254***		-86.2487***	-83.2012***
		(11.105)		(10.868)	(10.026)
Economic Risk Rating	-112.0122***		-110.9956***		
	(14.911)		(16.364)		
Financial Risk Rating	-93.0504***		-91.3630***		
	(10.134)		(9.669)		
Political Risk Rating	-46.8843***		-45.3012***		
	(9.164)		(8.918)		
SSA	-80.7685			-103.2169	-90.3941
	(123.727)			(137.510)	(119.195)
U.S. 3-month T-Bill Yield	4.1857	-10.1885	-11.9813	9.3113	5.5740
	(9.571)	(8.892)	(9.891)	(8.514)	(8.680)
VIX	9.3095***	8.2308***	7.8407***	10.1915***	9.5490***
	(1.149)	(1.290)	(1.350)	(1.313)	(1.088)
Dollar Index	7.4017***	9.5247***	8.7281***	9.3108***	8.1880***
	(1.570)	(2.043)	(1.985)	(1.444)	(1.491)
SSA x Overall Risk Rating		-25.7552			
		(39.219)			
SSA x Economic Risk Rating			-45.6248		
			(49.324)		
SSA x Financial Risk Rating			-29.5245		
			(43.672)		
SSA x Political Risk Rating			-44.1619		
			(33.728)		
SSA x U.S. 3-month T-Bill Yield		94.4660**	90.2199**		
		(40.680)	(35.722)		
SSA x VIX		7.8837*	8.9851*		
		(4.710)	(5.175)		
SSA x Dollar Index		-7.2560	-5.5814		
		(7.612)	(6.064)		
IMF Program					-47.4592
					(41.263)
IMF Program - Last 3 years					58.5310
					(49.970)
Constant	-528.6880**	3,321.8587***	-433.7070**	3,038.2289***	3,070.8064***
	(225.907)	(471.130)	(185.643)	(451.249)	(399.417)
Observations	13,022	13,022	13,022	10,596	13,022
Time FE	Year	Year	Year	Year	Year
Group FE	Income	Country	Country	Income	Income
R-squared	0.416	0.412	0.418	0.430	0.415
Number of countries	67	67	67	57	67

Note: Individual risk ratings in columns 1 and 3 are net of the other ratings. Columns 4 excludes G20 countries.
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A6. Determinants of Sovereign Spreads, Including Governance (Robustness)

	Dependent Variable: Sovereign Spreads Period: 2000m1 - 2023m12					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Overall Risk Rating			-63.2581***		-61.6401***	-62.3190***
			(8.619)		(7.911)	(7.464)
Economic Risk Rating	-49.2064***	-49.9201***		-51.6771***		
	(7.339)	(7.165)		(7.711)		
Financial Risk Rating	-56.7803***	-57.9002***		-57.6882***		
	(6.876)	(7.161)		(7.642)		
Governance index	-1,073.1394***	-933.6983***	-529.2449***	-829.1607***	-725.4076***	-628.5922***
	(257.294)	(193.038)	(187.341)	(198.009)	(207.764)	(184.976)
SSA		-150.6579			-273.8385	-197.6803
		(143.891)			(183.250)	(158.428)
U.S. 3-month T-Bill Yield	0.7783	1.1246	-15.4054*	-15.4148*	3.1400	0.8625
	(7.950)	(8.059)	(8.039)	(8.525)	(8.096)	(7.400)
VIX	9.9212***	9.9518***	8.7024***	8.8357***	10.4653***	9.8721***
	(1.161)	(1.163)	(1.270)	(1.309)	(1.317)	(1.100)
Dollar Index	7.3039***	7.0675***	8.7846***	7.9478***	9.5282***	8.3703***
	(1.581)	(1.554)	(1.686)	(1.836)	(1.444)	(1.404)
SSA x Overall Risk Rating			12.0180			
			(20.656)			
SSA x Governance index			-1,166.4190***	-1,156.0532***		
			(406.425)	(396.561)		
SSA x Economic Risk Rating				14.9624		
				(19.114)		
SSA x Financial Risk Rating				4.3955		
				(16.355)		
SSA x U.S. 3-month T-Bill Yie			86.5017***	88.1991***		
			(18.800)	(17.614)		
SSA x VIX			7.2457	6.9833		
			(4.492)	(4.609)		
SSA x Dollar Index			-1.2863	-3.3512		
			(4.680)	(4.435)		
IMF Program						-26.5646
						(43.558)
IMF Program - Last 3 years						61.1852
						(46.851)
Constant	-640.2158***	-724.8912***	2,058.9174***	-666.7836***	1,918.7882***	2,116.9522***
	(203.696)	(234.429)	(334.970)	(201.561)	(370.562)	(336.251)
Observations	11,842	11,842	11,842	11,842	9,608	11,842
Time FE	Year	Year	Year	Year	Year	Year
Cgroup FE	Country	Income	Country	Country	Income	Income
R-squared	0.435	0.452	0.480	0.479	0.490	0.455
Number of ccode	66	66	66	66	56	66

Note: Individual risk ratings in columns 1, 2, and 4 are net of the other ratings. Column 5 excludes G20 countries. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A7. Determinants of Sovereign Spreads, Including Sovereign Rating (Robustness)

	Dependent Variable: Sovereign Spreads Period: 2000m1 - 2023m12		
	Model 1	Model 2	Model 3
Sovereign rating	-133.6015***	-140.1038***	-119.4898***
	(22.828)	(20.525)	(18.940)
Overall Risk Rating		-48.7360***	-40.0456***
		(7.535)	(6.800)
Governance index			-232.6042
			(156.995)
U.S. 3-month T-Bill Yield	-19.8386***	-11.9967*	-14.5885**
	(7.176)	(7.113)	(7.119)
VIX	8.4116***	8.0154***	8.1300***
	(1.018)	(1.086)	(1.111)
Dollar Index	12.2112***	12.1673***	12.2737***
	(1.442)	(1.616)	(1.667)
Sovereign rating	-51.7116	-61.7415	-47.6182
	(50.714)	(48.291)	(49.514)
SSA x Overall Risk Rating		15.1514	-0.4463
		(19.902)	(19.763)
SSA x Governance index			-73.7369
			(581.601)
SSA x U.S. 3-month T-Bill Yield	46.2099*	41.2865*	45.7357**
	(23.533)	(24.650)	(22.500)
SSA x VIX	6.6879*	6.7531**	6.5669*
	(3.472)	(3.353)	(3.606)
SSA x Dollar Index	-6.5969	-7.3631	-5.0376
	(4.545)	(5.070)	(5.327)
Constant	531.2967**	697.0973***	371.9373*
	(207.127)	(204.750)	(213.463)
Observations	10,981	10,534	9,677
Time FE	Year	Year	Year
Group FE	Country	Country	Country
R-squared	0.480	0.530	0.515
Number of ccode	69	66	65

Note: The overall risk rating is net of the sovereign rating. Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.

Table A8. Determinants of Sovereign Ratings (Robustness)

	Dependent Variable: Sovereign Ratings Period: 2000m1 - 2023m12							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Overall Risk Rating					0.2499***			
					(0.038)			
Economic Risk Rating	0.4207***	0.1790***	0.3998***	0.1739***		0.1877***	0.1660***	0.1718***
	(0.053)	(0.027)	(0.052)	(0.026)		(0.031)	(0.029)	(0.026)
Financial Risk Rating	0.3456***	0.2187***	0.3246***	0.2095***		0.2465***	0.2145***	0.2012***
	(0.042)	(0.029)	(0.041)	(0.028)		(0.035)	(0.030)	(0.027)
Political Risk Rating	0.2060***		0.1941***					
	(0.041)		(0.038)					
Governance Index		4.6156***		4.3878***	3.5430***	4.6886***	4.5586***	4.4114***
		(0.654)		(0.603)	(0.809)	(0.802)	(0.622)	(0.598)
SSA			-1.0288*	-0.8499			-0.5503	-0.7396
			(0.585)	(0.540)			(0.589)	(0.541)
U.S. 3-month T-Bill Yield	-0.0160	-0.0228	-0.0163	-0.0226	-0.0310	-0.0109	-0.0278	-0.0237
	(0.022)	(0.023)	(0.022)	(0.023)	(0.029)	(0.030)	(0.023)	(0.023)
VIX	0.0035**	0.0022	0.0032**	0.0020	0.0024	0.0029	0.0012	0.0015
	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Dollar Index	-0.0027	-0.0005	-0.0029	-0.0007	-0.0018	0.0023	0.0026	-0.0009
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)	(0.004)	(0.004)
SSA x Overall_Rating					-0.0893			
					(0.056)			
SSA x Governance Index					-0.5733	-0.7892		
					(1.303)	(1.128)		
SSA x Economic Risk Rating						-0.0201		
						(0.040)		
SSA x Financial Risk Rating						-0.1058**		
						(0.049)		
SSA x U.S. 3-month T-Bill Yield					0.0371	-0.0362		
					(0.067)	(0.070)		
SSA x VIX					-0.0019	-0.0032		
					(0.008)	(0.007)		
SSA x Dollar Index					-0.0214	-0.0149		
					(0.013)	(0.014)		
IMF Program								-0.0788
								(0.111)
IMF Program - Last 3 years								-0.2990
								(0.212)
Constant	9.3372***	11.1511***	11.3011***	13.0954***	0.5101	11.0810***	13.0094***	13.2274***
	(0.433)	(0.477)	(0.615)	(0.638)	(1.580)	(0.478)	(0.736)	(0.629)
Observations	15,657	14,422	15,657	14,422	14,422	14,422	12,371	14,422
Time FE	Year	Year	Year	Year	Year	Year	Year	Year
Group FE	Country	Country	Income	Income	Country	Country	Income	Income
R-squared	0.328	0.372	0.3533	0.3961	0.387	0.378	0.4063	0.4024
Number of ccode	82	80	82	80	80	80	70	80

Note: Individual risk ratings in columns 1, 2, 3, 4, 6, 7, and 8 are net of the other ratings. Column 7 excludes G20 countries. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A9. Eurobond and Loan Issuances: Complementarity and IMF programs

	Eurobond		Loan	
	Model 1	Model 2	Model 3	Model 4
Overall risk rating	0.0014***	0.0036***	0.0015***	0.0039***
	(0.0003)	(0.0003)	(0.0003)	(0.0000)
VIX	-0.0007***	-0.0011***	0.0013***	0.0009***
	(0.0002)	(0.0002)	(0.0002)	(0.0001)
US 3M rate	-0.0014*	-0.0042***	0.0025**	-0.0022**
	(0.0008)	(0.0008)	(0.0011)	(0.0009)
USD index	0.0003*	0.0008***	-0.0010***	-0.0014***
	(0.0002)	(0.0001)	(0.0002)	(0.0002)
Eurobond issuance (last 3 years)	0.0912***		0.0337***	
	(0.0039)		(0.0034)	
Loan issuance (last 3 years)	0.0284***		0.1360***	
	(0.0031)		(0.0050)	
IMF program presence (last 3 years)		0.0077***		0.0112***
		(0.0028)		(0.0033)
Pseudo R squared	0.150	0.025	0.123	0.025
Observations	25,438	29,038	25,438	29,038
Countries	102	102	102	102

Notes: Results are based on probity model in (X). where average marginal effects are reported. *** p<0.01, ** p<0.05, * p<0.10

Table A10. Likelihood of Issuance: Logit model (Robustness)

	Eurobond		Loan	
	Model 1	Model 2	Model 3	Model 4
Overall risk rating	0.0031***	0.0016***	0.0034***	0.0027***
	(0.0002)	(0.0002)	(0.0003)	(0.0003)
VIX	-0.0012***	-0.0011***	0.0008***	0.0011***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
US 3M rate	-0.0043***	-0.0032***	-0.0021**	0.0001
	(0.0008)	(0.0008)	(0.0009)	(0.0011)
USD index	0.0007***	0.0006***	-0.0016***	-0.0019***
	(0.0001)	(0.0001)	(0.0002)	(0.0002)
SSA		-0.2150***		-0.1902***
		(0.755)		(0.0478)
Overall risk rating x SSA		0.0036***		0.0024***
		(0.0011)		(0.0007)
VIX x SSA		-0.0024**		-0.0011***
		(0.0010)		(0.0004)
US 3M rate x SSA		-0.0146***		-0.0095***
		(0.0043)		(0.0023)
USD index x SSA		0.0004		0.0013***
		(0.0006)		(0.0004)
Pseudo R squared	0.023	0.059	0.025	0.027
Observations	29038	29038	29038	29038
Countries	102	102	102	102

Notes: Results are based on logit model in (X). where average marginal effects are reported. *** p<0.01, ** p<0.05, * p<0.10

Table A11. Likelihood of issuance robustness: probit model with year fixed effects

	Eurobond		Loan	
	Model 1	Model 2	Model 3	Model 4
Overall risk rating	0.0035***	0.0019***	0.0036***	0.0029***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
VIX	-0.0012***	-0.0011***	-0.0002	0.0001
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
US 3M rate	-0.0018	-0.0012	-0.0095***	-0.0073***
	(0.0028)	(0.0028)	(0.0035)	(0.0035)
USD index	-0.0003	-0.0003	0.0011*	0.0008
	(0.0005)	(0.0005)	(0.0006)	(0.0006)
SSA		-0.1821***		-0.1821***
		(0.0065)		(0.0478)
Overall risk rating x SSA		0.0030***		0.0024***
		(0.0010)		(0.0007)
VIX x SSA		-0.0018**		-0.0012***
		(0.0008)		(0.0004)
US 3M rate x SSA		-0.0108***		-0.0090***
		(0.0033)		(0.0022)
USD index x SSA		0.0003		0.0012***
		(0.0005)		(0.0004)
Pseudo R squared	0.030	0.064	0.037	0.040
Observations	29038	29038	29038	29038
Countries	102	102	102	102

Notes: Results are based on probit model in (X) by including year fixed effects. where average marginal effects are reported. *** p<0.01, ** p<0.05, * p<0.10

Table A12. Facts Eurobonds (full sample of EMDEs) spread to benchmark bps

	25th	Median	Mean	75th	Std. dev.	Obs.
			SSA			
Maturity	10	10	13.6	14.9	8.1	114
Spread	311.5	441.5	433.6	550.6	158.9	96
			Non-SSA			
Maturity	6	10	12.7	14.3	10.0	1,835
Spread	159.1	242.7	284.6	384.4	168.6	1,170

Table A13. Facts of loans (full sample of EMDEs) Libor margin

	25th	Median	Mean	75th	Std. dev.	Obs.
			SSA			
Maturity	5	8	9.6	13	6.7	647
Spread	70	210	247.8	375	194.4	40
			Non-SSA			
Maturity	5	8	9.4	13	6.7	2,254
Spread	75	150	189.7	278	158.2	274

Table A14. Determinants of domestic currency bond yield

	Dependent Variable: Domestic Local Currency 5-year T-bond Yield Period: 2011m1 - 2024m9							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Non-resident Holdings	-0.1079***	0.0311	-0.1077***	-0.0380***	-0.0129***	-0.0129***	-0.0075***	-0.0093**
	(0.005)	(0.033)	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)
U.S. 5-year T-bond Yield			0.7030***	0.1296	0.1694	0.1673	0.2273*	0.1829
			(0.240)	(0.179)	(0.159)	(0.160)	(0.132)	(0.154)
Domestic Policy Rate				0.6840***	0.6742***	0.6735***	0.5595***	0.6501***
				(0.039)	(0.032)	(0.032)	(0.029)	(0.031)
Dollar Index						0.0252	0.0189	0.0268
						(0.041)	(0.035)	(0.040)
Overall Risk Rating					-0.3350***	-0.3361***	-0.1982***	-0.3526***
					(0.025)	(0.025)	(0.021)	(0.024)
SSA							5.0698***	
							(0.276)	
SSA x Non-resident Holdings							-0.0348***	
							(0.009)	
High Debt								1.1393***
								(0.204)
High Debt x Non-resident Holdings								0.0426***
								(0.008)
Observations	3,340	3,340	3,340	3,334	3,084	3,073	3,073	3,073
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	No	Yes	No	No	No	No	No	No
R-squared	0.093	0.245	0.095	0.562	0.674	0.674	0.772	0.698
Number of id	25	25	25	25	24	24	24	24

Note: Constant is included in all models, but not reported.

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A15. Determinants of domestic currency bond yield

	Dependent Variable: Domestic Local Currency 5-year T-bond Yield Volatility Period: 2011m1 - 2024m9					
	Volatility with Monthly Data			Volatility with Daily Data		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Non-resident Holdings	0.0022***	0.0046***	-0.0007	0.0024***	0.0027***	0.0026**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
U.S. 5-year T-bond Yield	0.0664**	0.0618*	0.0701**	-0.0483	-0.0503	-0.0472
	(0.033)	(0.032)	(0.033)	(0.087)	(0.087)	(0.087)
Domestic Policy Rate	0.0222***	0.0282***	0.0206***	0.0630***	0.0652***	0.0624***
	(0.003)	(0.003)	(0.003)	(0.009)	(0.009)	(0.009)
Dollar Index						
Overall Risk Rating	-0.0337***	-0.0371***	-0.0348***	-0.0370***	-0.0396***	-0.0375***
	(0.004)	(0.004)	(0.004)	(0.009)	(0.010)	(0.009)
SSA		-0.0325			-0.0763	
		(0.045)			(0.095)	
SSA x Non-resident Holdings		-0.0101***			-0.0017	
		(0.002)			(0.003)	
High Debt			-0.1487***			0.0318
			(0.034)			(0.073)
High Debt x Non-resident Holdings			0.0127***			0.0006
			(0.002)			(0.003)
VIX, ln	0.0841*	0.0824*	0.0848*	0.0612	0.0598	0.0612
	(0.049)	(0.048)	(0.049)	(0.099)	(0.099)	(0.099)
Observations	3,011	3,011	3,011	2,852	2,852	2,852
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.217	0.242	0.231	0.203	0.204	0.203
Number of countries	24	24	24	24	24	24

Note: Volatility with monthly data (model 1, 2, 3) is computed as the standard deviation of bond yields using 19-month rolling window and volatility with daily data (model 4, 5, 6) is computed as the standard deviation of bond yields using 90-days rolling window.
Constant is included in all models, but not reported.
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A16. Impact of non-resident holding on domestic bond yields robustness: Pooled OLS

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5	(6) Model 6	(7) Model 7	(8) Model 8	(9) Model 9	(10) Model 10
nonresident_holdings	-0.1119***	-0.1068***	-0.1127***	-0.0689***	-0.0396***	-0.0398***	-0.0145***	-0.0106***	-0.0096**	-0.0129***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)
us_tbond_yield		0.5871***		0.1154*	-0.2151***	-0.2184***	0.0043	0.1182**	-0.0550	0.1673
		(0.080)		(0.069)	(0.055)	(0.055)	(0.061)	(0.050)	(0.058)	(0.160)
policy_rate					0.6698***	0.6698***	0.6602***	0.5459***	0.6496***	0.6735***
					(0.040)	(0.040)	(0.031)	(0.029)	(0.030)	(0.032)
dollar_index_pch						0.0778*	0.0655*	0.0499	0.0744*	0.0252
						(0.044)	(0.039)	(0.033)	(0.038)	(0.041)
overall_risk_rating							-0.3367***	-0.2015***	-0.3368***	-0.3361***
							(0.024)	(0.020)	(0.023)	(0.025)
1.ssa_dummy#c.nonresident_holdings								-0.0314***		
								(0.009)		
vix			-0.0236*							
			(0.013)							
inflation				0.3528***						
				(0.023)						
1.debt#c.nonresident_holdings									0.0446***	
									(0.008)	
Constant	10.1680***	8.9546***	10.6120***	6.8897***	4.4316***	4.4235***	18.9378***	12.2768***	18.4582***	19.1275***
	(0.139)	(0.214)	(0.284)	(0.223)	(0.322)	(0.322)	(1.207)	(0.974)	(1.150)	(1.301)
Country FE	No	No	No	No	No	No	No	No	No	No
Observations	3,340	3,340	3,340	3,328	3,334	3,323	3,073	3,073	3,073	3,073
Number of countries	25	25	25	25	25	25	25	25	25	25
R-squared	0.073	0.089	0.074	0.293	0.548	0.548	0.666	0.766	0.690	0.674

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A17. Impact of non-resident holding on domestic bond yields robustness: Pooled OLS with country fixed effects

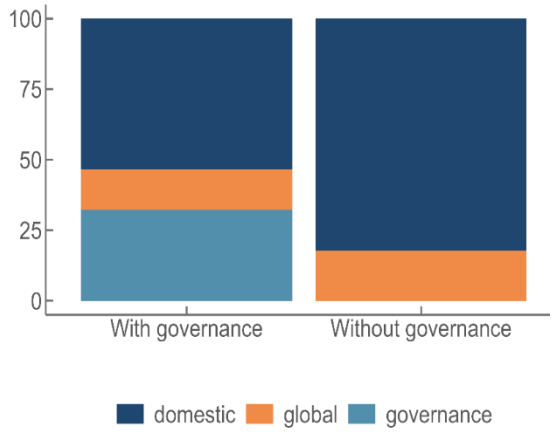
VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5	(6) Model 6	(7) Model 7	(8) Model 8	(9) Model 9	(10) Model 10
nonresident_holdings	-0.0013	0.0197	-0.0021	0.0401*	0.0325*	0.0327*	0.0346*	0.0325	0.0162	0.0318*
	(0.036)	(0.032)	(0.036)	(0.022)	(0.019)	(0.019)	(0.018)	(0.020)	(0.014)	(0.018)
us_tbond_yield		0.7038***		0.5053***	0.3811***	0.3809***	0.3835***	0.3807***	0.3916***	0.4945***
		(0.134)		(0.093)	(0.091)	(0.091)	(0.071)	(0.073)	(0.073)	(0.084)
policy_rate					0.1603	0.1594	0.2422***	0.2429***	0.2364**	0.2900***
					(0.103)	(0.102)	(0.085)	(0.086)	(0.086)	(0.092)
dollar_index_pch						0.0393***	0.0456***	0.0453***	0.0441***	0.0242
						(0.013)	(0.015)	(0.015)	(0.013)	(0.015)
overall_risk_rating							-0.1705***	-0.1697***	-0.1680***	-0.2250***
							(0.054)	(0.053)	(0.049)	(0.067)
inflation				0.1519***	0.0937***	0.0937***	0.0649***	0.0656***	0.0640***	
				(0.029)	(0.023)	(0.023)	(0.021)	(0.020)	(0.018)	
1.ssa_dummy#c.nonresident_holdings								0.0134		
								(0.033)		
vix			-0.0093							
			(0.010)							
1.debt#c.nonresident_holdings									0.0577***	
									(0.019)	
Constant	8.1452***	6.4197***	8.3305***	5.4617***	5.0503***	5.0466***	12.3232***	12.2755***	12.6202***	15.4407***
	(0.666)	(0.726)	(0.662)	(0.583)	(0.738)	(0.740)	(2.709)	(2.687)	(2.533)	(3.563)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,340	3,340	3,340	3,328	3,322	3,311	3,062	3,062	3,062	3,073
R-squared	0.000	0.197	0.001	0.388	0.451	0.454	0.554	0.555	0.572	0.563
Number of countries	25	25	25	25	25	25	24	24	24	24

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

FIGURES

Figure A1. Relative importance of estimators

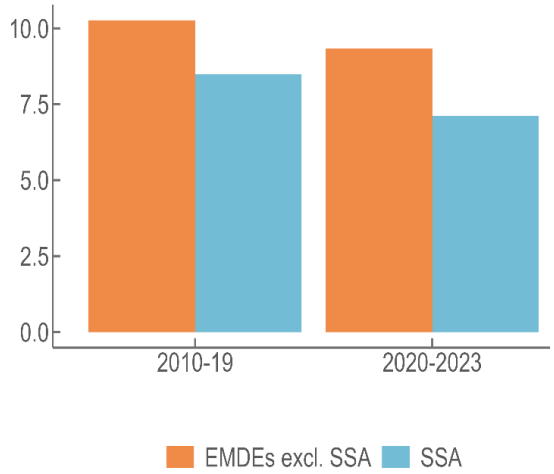
(percent)



Source: IMF staff calculations

Figure A2. Sovereign ratings

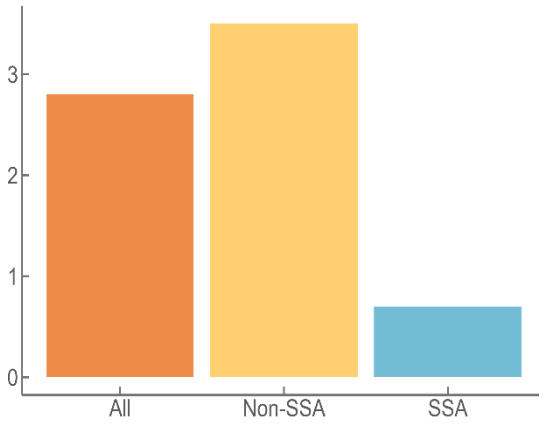
(group median; range = [0-30])



Source: The World Bank Fiscal Space Database.

Figure A3. Likelihood of Eurobond issuance

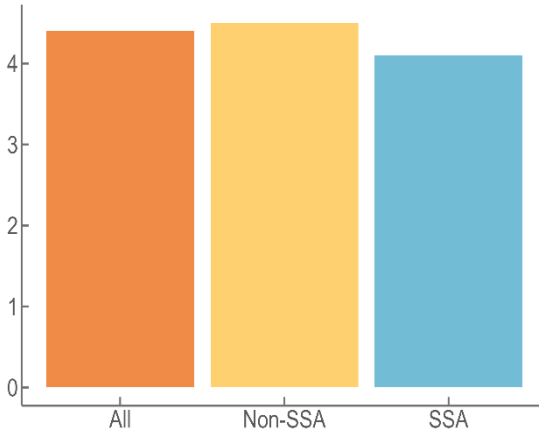
(probability)



Source: IMF staff calculations

Figure A4. Likelihood of loan issuance

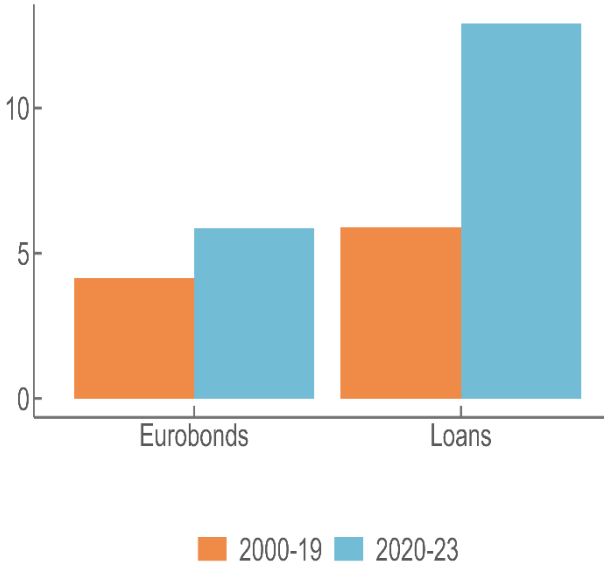
(probability)



Source: IMF staff calculations

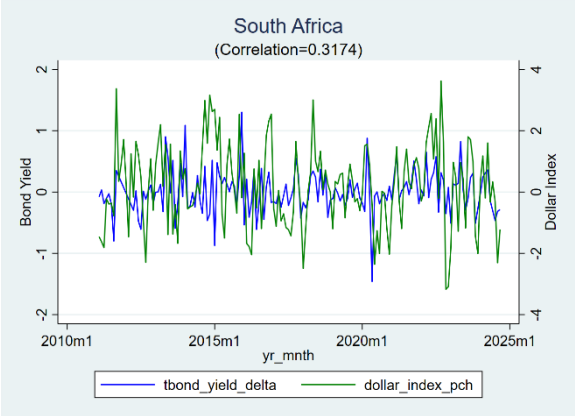
Figure A5. Sub-Saharan Africa: Average annual Eurobonds and Loans Issuances

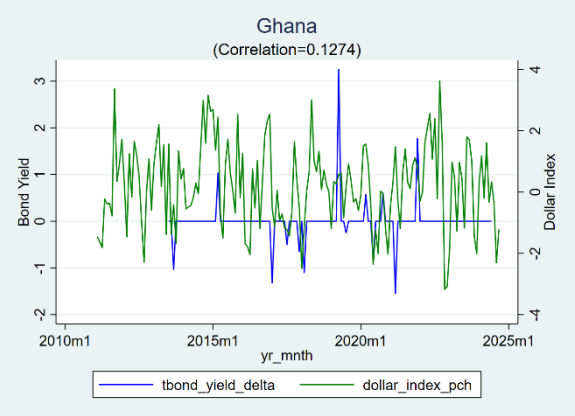
(in billion USD)

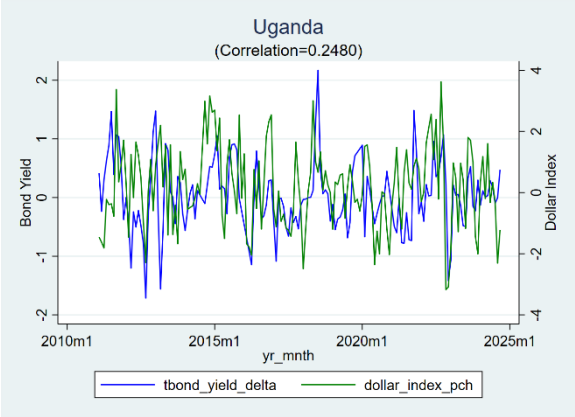


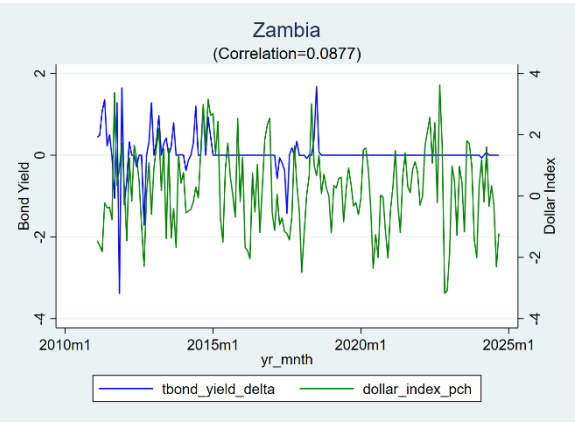
Source: Dealogic

Figure A6. Bond Yield and Dollar Index









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PUBLICATIONS

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